CERTIFICATION PROGRAMS

AISC 207-25 AUDIT GUIDE
All Fabricator, Manufacturer and Erector Programs and Endorsements

Purpose
This audit guide will help you transition between the *Standard for Certification Programs* (AISC 207-23) and the updated *Standard for Certification Programs* (AISC 207-25). This guide is compliments of QMC.

Scope
This audit guide can be used during internal audits to identify "gaps" between your management systems and the updated standard or as a starting point for implementing management systems to meet the certification requirements. It can also be useful if you are considering adding additional certifications and/or endorsements. This audit guide includes all certification programs and endorsements. **The Governing *Requirements for Certification Programs* and the program specific Supplemental Requirements are not included but should be reviewed as part of the internal audit to ensure compliance.** For users of the *Certification Standard for Shop Application of Complex Protective Coating Systems* (AISC 420-25/SSPC-QP 3) the additional criteria are included with reference to the general sections of 207-25.

Use Instruction

Explanation of the column layout:

- **Ref# -** identifies the section or subsection of new standard 207-25
- **Criteria -** notes the text from the new standard and each "shall" is required for implementation of the management system(s)
- **MS Ref -** record the reference of the management system which contains these criteria. (procedure number, Quality Manual section, etc.)
- **Audit Findings -** use this space to indicate what was observed, which provides evidence of what was reviewed to determine conformance
- **Results -** use to indicate the result of comparing the evidence observed versus the criteria. A key is provided in the footer of each page.

When a section contains new criteria or of significant change, the revised portion of the criteria will be in **RED** to make identification of potential changes or gaps easy to identify.

Please note the following changes that were included throughout the 207-25 but are **not** highlighted in red:

- The use of examples and parentheses were reviewed and revised as needed for clarity.
- The glossary contains several revised terms. This should be used as a reference for the internal audit. Glossary terms for abbreviations have been moved to a separate section. Terms found in the Glossary are found in italics throughout the 207-25 and this guide. The Glossary is not included in this guide.
- Many Commentary notes were added to the 207. These are very helpful in understanding how to implement the various requirements. These should be referenced during the internal audit.

<u>Customize to Your System</u>
If you have multiple certifications and/or endorsements, you may want to copy and paste the criteria from the supplemental Chapters of 207-25 provided in this guide into the row of the associated general section. Criteria that do not apply to your certifications can be deleted by making a custom internal audit guide for your company.

Ref#	Criteria	MS Ref	Audit Findings	Results
1.1	**Purpose** The purpose of this Standard is to confirm to owners, the design community, the construction industry, and public officials that certified participants who adhere to the requirements in this Standard have the personnel, organization, experience, documented procedures, knowledge, equipment, and commitment to quality to perform fabrication, manufacturing, and/or erection as described in this Standard.		Provided for information ONLY	
1.2	**Scope** The requirements in this Standard shall apply as follows: (a) Chapters 1 and 2 shall apply to building *fabricators*, who fabricate and supply the *structural steel* frames for buildings where elements of the frames are as defined in AISC *Code of Standard Practice* Section 2.1. (b) Chapters 1 and 3 shall apply to metal *component manufacturers*, who *manufacture components* that include bracing not designed for primary loads, such as diaphragms, cross frames, and lateral bracing; camera, light, sign, and signal support structures; bridge rail; stairs; walkways; grid decks; drains; scuppers; expansion joints; bearings; ballast plates; and mechanical movable bridge equipment. When specified in the *contract documents, manufacturers* of camera, light, sign, and signal support structures; high mast light towers; bridge rail; complex expansion joints; high-load multi-rotational (HLMR) bearings; and mechanical movable bridge equipment shall also meet specific supplemental requirements to those in Chapter 3. (c) Chapters 1 and 4 shall apply to bridge *fabricators*, who fabricate and supply steel highway or railroad bridges. (d) Chapters 1 and 5 shall apply to *erectors* of *structural steel*. (e) Chapters 1 and 6 shall apply to hydraulic metal structure *fabricators*. In Chapters 2 through 6, only those subsections that are supplementary to Chapter 1 are indicated. The Glossary is an integral part of this Standard. Nonmandatory Commentaries are provided for background, and the user is encouraged to consult them.		Provided for information ONLY	
1.3	**References** The reference documents and standards necessary to make personnel aware of work requirements shall be consistent with the requirements of existing *contract documents* and shall be readily available to those who need them. The ability to work to and meet the requirements of the latest edition of the follow- ing documents shall be demonstrated: (a) ANSI/AISC 303 *Code of Standard Practice for Steel Buildings and Bridges* (b) RCSC *Specification for Structural Joints Using High-Strength Bolts* (c) *Selected ASTM Standards*, as available from AISC (at their portal for ASTM online access), or ASTM standards necessary for compliance with the contract documents (d) AWS A2.4 *Symbols* (e) AWS A3.0M/A3.0 *Terms and Definitions* (f) AWS D1.1/D1.1M *Structural Welding Code—Steel*		Provided for information ONLY	
1.4	**Definitions** As used in this Standard, the words **shall**, **must**, or **will** denote a mandatory requirement. The word **should** denotes a guideline or recommendation. The words **may** or **can** denote an opportunity to make a choice.		Provided for information ONLY	

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Ref#	Criteria	MS Ref	Audit Findings	Results
1.5	**MANAGEMENT RESPONSIBILITY**			
1.5.1	**Policy for Quality** *Executive management* shall ensure that a policy for quality is communicated, implemented, and maintained. The policy for quality shall include: (a) A commitment to quality that includes a commitment to meet the requirements in *contract documents* (b) A *quality management system* that provides a framework for establishing, communicating, and reviewing the quality goals of the organization *Executive management* shall establish goals to improve quality. Goals shall be measurable and documented through *objective evidence*. As quality goals are achieved, new goals shall be set that demonstrate commitment to continuous improvement. **Commentary:** New quality goals can include a new level of achievement of a previous goal or a new goal that has not been previously identified.			
1.5.2	**Quality Management System** The *quality management system* shall satisfy the requirements of this Standard and the requirements of the *contract documents* and referenced standards. The *quality management system* shall include a *quality manual*, *documented procedures*, and records. The *quality management system* must address both *quality control* and *quality assurance* as defined in the Glossary of this Standard. *Documented procedures* shall contain the following: (a) The purpose of the *procedure* (b) A process definition that includes steps required for completion (c) Assignment of responsibility for performance (d) Assignment of responsibility for review, revision, and/or approval of the *procedure* (e) Identification of records that are generated (f) For inspection activities, frequency of observations or inspections and how those observations or inspections are documented **Commentary:** The extent of the *quality management system documentation* can differ from one organization to another based upon the size of organization, the type of activities, and the complexity and interaction of processes. Requirements may be satisfied in a single document called the *quality manual* that may incorporate separate documents by reference.			

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1.5.3	**Management Review** *Executive management* shall conduct a review of the *quality management system* at planned intervals, but annually at a minimum. Further, at a minimum, management review shall include assessment and *documentation* of the following: (a) A summary of previous management reviews (b) Results of any internal and external audits conducted since the previous management review (c) Customer feedback and feedback mechanisms, identifying opportunities for improving quality (d) Work *nonconformances*; both the number and severity of *nonconformances shall be assessed* (e) Process *nonconformances*, including compliance with the *documented procedures* comprising the *quality management system* (f) Effectiveness of the *corrective actions* taken (g) Results of equipment maintenance and preventive maintenance, including the adequacy of equipment resources (h) Adequacy of the *training* program with respect to the levels of qualification required (i) Proposed or required modifications to the *quality management system* The management review record shall include the decisions and actions required for implementation of the following: (a) Improvement of the effectiveness of the *quality management system* and its processes (b) Improvement of quality (c) Resource needs Records from management reviews shall be maintained in accordance with the *documented procedure* as required in Section 1.9.			
1.5.4	**Responsible Quality Personnel** *Executive management* shall designate a management representative or representatives for quality who shall report directly to, or be a part of, *executive management*. The designated management representative(s) for quality may perform other functions within the company, provided that those functions do not conflict with the quality responsibilities. The designated management representative(s) shall have the ability, responsibility, and authority to: (a) Ensure that *documented procedures* needed for the *quality management systems* are established, implemented, and maintained in accordance with this Standard. (b) Report to *executive management* on the performance of the *quality management system* and any need for improvement. (c) Communicate with external parties on matters relating to the *quality management system.*			

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1.5.5	**Resource Management** Resources necessary to comply with the *contract documents* shall be available. Resources are applicable to both personnel and non-personnel. The qualification requirements, responsibility, authority, and the interrelation of functional positions that manage, perform, and verify work affecting quality shall be defined as required in Section 1.5.7 and in the industry-specific chapters. Other provisions relating to personnel are found elsewhere in the Standard. See Sections 2.5.5, 3.5.5, 4.5.5, 4.I.5.5, and 5.5.5.3, and 6.5.5.2 for non-personnel, industry-specific resource requirements. **Commentary:** *Objective evidence* of qualification may be demonstrated through biographies, résumés, *documented training*, and licenses or certifications. Personnel may be assigned to more than one function, provided they are qualified and able to perform fully the duties of each position.			
1.5.6	**Internal Communication** *Executive management* shall ensure that appropriate communication processes are established and that communication takes place on a regular basis regarding the effectiveness of *management systems*.			
1.5.7	**Quality Manual** The *quality manual* shall include a page showing the current revision date and the name and location of the facility or organization. The *quality manual* shall include or incorporate by reference the following documents at a minimum: (a) Documented statements of a quality policy and quality objectives as required by this Standard (b) *Documented procedures* established for the *quality management system* (c) Documents needed by the organization to ensure the effective planning, operation, and control of its processes (d) Organizational chart describing the interrelationship of functional positions that affect quality (e) Job descriptions outlining and describing responsibilities, authority, required qualifications, and activities for *key positions* (f) Qualification evidence for individuals in *key positions*/functions *Executive management* shall define additional *documented procedures*, drawings, or other documents that are required beyond the minimum requirements set by this Standard to meet the needs of the organization and its customers. The highest-ranking member of *executive management* shall sign and date the *quality manual*. **Commentary:** *Executive management* determines the level of detail in the *quality manual* and *procedures*. At a minimum, these documents should be detailed enough to adequately describe the *quality management system* used to ensure the end work meets the required quality.			

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1.6	**Construction Document Review and Communication** A *documented procedure* shall be developed for contract and project specification review. The *procedure* shall require these reviews for each project, and the review shall begin no later than the acceptance of responsibility for performing the work. Records of this review shall be maintained in accordance with the *documented procedure* as required in Section 1.9. **Commentary:** Ideally, the review should begin during the project estimation or bid process. The review should identify, plan for, and record the specific project requirements. The *documented procedure* should provide for review of the *contract documents* and referenced standards to ensure awareness of the contract requirements. Evidence of contract review may take the form of technical summaries, sign- offs, schedules, change orders, and allocation of adequate resources, as well as development of an *erection plan* as applicable. Such evidence should indicate consideration of pertinent sections of this Standard and other critical project requirements that, if missed, may have a major impact on project quality.			
1.7	**DETAILING -** Section 1.7 does not apply to *erectors*.			

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1.7.1	**Detailing Standards** The *fabricator* or *manufacturer* shall prepare and use *detailing* standards describing technical preferences and requirements. These standards shall show special information required on advance bills such as allowances for cuts, camber, or supplementary requirements. The *detailing* standards shall include how bills of materials are prepared, which, at a minimum, include the following: (a) Sizes and quantities (b) Appropriate specification references (c) Special ordering information (d) Any allowances or tolerances The *detailing* standards shall describe the *fabricator's* or *manufacturer's* methods of drawing layout, including, but not limited to: (a) Sections and views (b) Title block information (c) The method of designating shipping sequences (d) The piece-marking system (e) Commonly used shop abbreviations (f) *Fabricators*: Showing bolt placement lists, including bolt type and installation requirements (g) *Fabricators*: Information required on weld symbols, including any special nondestructive testing (NDT) requirements (h) *Fabricators*: The *detailing* standards shall describe the method for: (i) Selection of connection type, connection geometry, and connection material (ii) *Detailing* of holes, fasteners, washers, cuts, and copes (iii) Assignment of appropriate and complete welding symbols for shop and field welds (iv) Selecting bolt installation method for shop-installed bolts (v) Showing surface preparation, including specification of surface finish (vi) Designating *coating* requirements, including *coating* materials and dry film thickness (vii) Showing any necessary special instructions to fabricate and erect the steel (i) *Manufacturers*: If applicable, illustrate information to be included on weld symbols and the preferred way to designate surface preparation and *coating* requirements			
1.7.1.1	**Digital Document Production** For digital *fabrication*, manufacturing, *erection*, and *installation documents*, the *documented procedure* for producing these documents shall identify the data, variables, graphics, calculating formulas, and other output as appropriate that are checked to determine that the software is functioning correctly.			

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1.7.2	**Checking** The *fabricator* shall develop a *documented procedure* to provide for *checking* of the *fabrication* and *erection documents*. The *documented procedure* for *checking* of these documents shall describe the method used by the *fabricator* or its *subcon- tractor* to perform and record the final check to ensure compliance with *contract documents*. Records shall provide a means for identification of the individual *checker* who performed the final check of each document. When *detailing* is performed by a *subcontractor*, the *documented procedure* shall define the extent of review required by management and the extent of *checking* required of received documents prior to submittal for approval. The *documented procedure* for *checking fabrication* and *erection documents* shall include comparison and compliance with project requirements. During the *checking* process, the following shall be verified: (a) Geometry (b) Use of connections as specified in the *contract documents* (c) Appropriate notes are included (d) Material usage as specified in the *contract documents* (e) Shop bills contain all required information (f) Use of appropriate and complete welding symbols (g) Use of *coatings* and surface preparations as specified in the *contract documents* (h) Proper representation on *erection drawings*, including the notation of any necessary instructions and depiction of details necessary to conduct the work in the field (i) All information is accurately presented and in compliance with the *Code of Standard Practice* requirements (j) All steel included in the *contract documents* has been detailed			
1.7.3	**Control of Approval Documents** A *documented procedure* shall be developed for the control of *approval documents* and shall describe the method used to document *owner* approval of *approval documents*, whether produced in-house or through a *subcontractor*. **Commentary:** Such methods used to document *owner* approval [through the *owner's designated representative for design (ODRD)* and the *owner's designated representative for construction (ODRC)*] may include signatures, stamps, logs, files, or lists. Section 4.4 in the AISC *Code of Standard Practice for Steel Buildings and Bridges* addresses the approval of *approval documents* (previously known as *shop* and *erection drawings*). Subsection 4.4.1 states that "Approval, approval subject to corrections noted, and similar approvals of the *approval documents* shall constitute...release by the *ODRD* and the *ODRC* for the *fabricator* to begin *fabrication* using the approved submittals." See AISC *Code of Standard Practice* Section 4 for further elaboration of the process of approval of *approval documents*.			
1.7.4	**Fabrication and/or Installation Documents Supplied by Others** When the *fabricator* or *manufacturer* receives *fabrication* or *installation documents* from others (i.e., the *owner* or an outside entity), a *documented procedure* shall define the method of receipt, revision, and control of those documents. **Commentary:** Refer to AISC *Code of Standard Practice* Section 4.5 for further elaboration.			

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1.7.5	**Management of Detailing** The *fabricator's* staff or *manufacturer's* staff shall manage *detailing*. Responsibilities for *detailing* management shall include the following: (a) Overseeing the production of *fabrication*, *manufacturing*, *erection*, and *installation documents*, including the work of *subcontractors* (b) Communicating with *owner's* representative for design (c) Scheduling (d) Developing and maintaining company *detailing* standards and documented *detailing* procedures (e) Preparing and sending transmittals related to obtaining approval from the *owner's designated representative for design* or *construction* (f) Coordinating and incorporating construction requirements (g) *Training* of employed *detailers* and *checkers* Qualification requirements for *detailing* management personnel shall include experience in *detailing* and *checking fabrication* and *erection documents* that have been approved for a variety of structures representative of projects the *fabricator* or *manufacturer* provides. The *fabricator* or *manufacturer* shall determine and describe methods to demonstrate competence of *detailing* management personnel. *Detailing* management shall be familiar with the requirements of applicable codes and specifications.			
1.7.6	**Detailing Functions** Personnel who perform *detailing* or *checking* shall have experience in drawing projects similar to the projects the *fabricator* or *manufacturer* provides and shall have knowledge of applicable material specifications and of mill rolling practices as they affect the *detailing* of *structural steel*. *Detailers* in *training* shall work under the supervision of a trained *detailer* or *checker*. A qualified *checker* shall check the *fabrication* and *erection documents* prior to submittal for approval. Qualification requirements for *checkers* shall be defined and documented and include *training* and experience in selecting connections. Demonstrated experience and competency of employed and subcontracted individuals performing final checks shall be documented by *detailing* management. **Commentary:** *Detailers* and *checkers* should be assigned on the basis of quali- fication, evidenced by experience, *training,* and education. Qualification stan- dards and certifications granted by recognized industry organizations, such as the National Institute of Steel Detailing, Inc., can be used as a basis for qualifi- cation. See AISC *Code of Standard Practice* Section 4 for an elaboration of the process of approval of *approval documents*.			
1.7.7	**Subcontracted Services** *Subcontractors* may be used for the following functions: *detailing*, connection shop standards, delegated connection design as applicable, and *checking* and *training* of *detailers* and *checkers*. The *fabricator* or *manufacturer* shall define and document the qualification and selection process for choosing *subcontractors*.			

Ref#	Criteria	MS Ref	Audit Findings	Results
1.8	**CONTROL OF MANAGEMENT SYSTEM DOCUMENTS AND PROJECT DOCUMENTS**			
1.8.1	**Management System Documents** A *documented procedure* shall be developed to control *quality management system* documents.			
1.8.1.1	**Quality Management System Documents** Documents covered by this section shall include, but are not limited to, the *quality manual* and any *documented procedures*.			
1.8.1.2	**Review and Approval** Documents shall be reviewed and approved by the same function and authority level that authorized the original document. The function and authority levels that have responsibility for review and approval of internal standards and *documented procedures* shall be designated. The *documented procedure* shall describe the frequency and requirements for review and updating and establish a method to identify changes.			
1.8.1.3	**Revision Control** Revisions to *quality management system* documents shall be identifiable, and there shall be a method for monitoring and identifying the latest revision. Revisions shall be reviewed for adequacy and approved by the same function and authority level that authorized the original document. *Quality management system* documents shall remain legible and easily identifiable.			
1.8.1.4	**Access** Documents shall be available and readily accessible to the personnel responsible for performing functions affecting the quality of the completed work.			
1.8.1.5	**Communication** Changes and revisions shall be communicated to the personnel responsible for performing functions affecting the quality of the completed work.			
1.8.2	**Project Documents** A *documented procedure* shall be developed to control project documents. Documents covered by this section shall include, but are not limited to, *contract documents*; revised *contract documents*; *requests for information (RFI)*; and *fabrication*, *manufacturing*, *erection*, and *installation documents*.			

Ref#	Criteria	MS Ref	Audit Findings	Results
1.8.2.1	**Tracking** Project documents and changes to project documents shall be tracked. Tracking information shall indicate, at a minimum, date of receipt, summary of issue, and ultimate disposition of the change, including distribution of the final decision to the appropriate parties. The *documented procedure* shall define methods for receipt and *documentation* of *owner* and general contractor requirements and *fabricator*-originated changes as they occur throughout the *fabrication* and *detailing* process. Requirements may be received in original *contract documents*; in subsequent telecommunications, letters, and related transmittals; and in change orders or contract addenda. The *documented procedure* shall require records, such as logs, files, or master lists, that show receipt of change data, incorporation, issue, and distribution of approved and revised *approval documents* to the necessary departments and personnel at the *fabricator's* facility and necessary external organizations, *subcontractors*, or *suppliers*.			
1.8.2.2	**Revision Control** For project documents that the *fabricator*, *erector,* or *manufacturer* produces, revisions shall be identifiable, and there shall be a method for monitoring and identifying the latest revision. The *documented procedure* shall include provisions to prevent inadvertent use of obsolete documents. Project documents shall remain legible and easily identifiable.			
1.8.2.3	**Access** Project documents shall be available and readily accessible to the personnel responsible for performing functions affecting the quality of the completed work.			
1.8.2.4	**Communication** Changes and revisions shall be communicated to the personnel responsible for performing functions affecting the quality of the completed work.			

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1.9	**MAINTENANCE OF QUALITY RECORDS** A *documented procedure* shall be developed for the maintenance of *quality records* that provide for record identification, collection, storage and retrieval, retention, and disposition. **Commentary:** *Quality records* commonly include items such as: (a) *Calibration* records (b) Certificates of conformance (c) *Corrective action* requests (d) Drawing logs (e) Equipment maintenance records (f) Inspection records (g) Internal and external *quality management system* audits (h) Mill and consumable purchase orders (i) Mill test reports (MTR) (j) Nondestructive testing (NDT) reports (k) Personnel certifications (l) Purchasing documents (m) Records or summaries of *nonconformance* reports (n) Revisions to the *contract documents* (o) *RFI*s and related *documentation* (p) *Subcontractor* and *supplier* evaluations (q) *Training* records			
1.9.1	**Retention** The *documented procedure* for the maintenance of *quality records* shall define the retention policy and provisions for the disposition of the records at the end of the retention period.			
1.9.2	**Storage** *Quality records* shall be stored in a manner that minimizes damage, deterioration, or loss.			
1.9.3	**Retrieval** *Quality records* shall be accessible in a reasonable time frame.			
1.10	**PURCHASING** A *documented procedure* shall be developed to ensure that *subcontractors* and *sup- pliers* provide contracted services and materials that conform to project requirements.			

Ref#	Criteria	MS Ref	Audit Findings	Results
1.10.1	**Purchasing Data** A *documented procedure* shall be developed that addresses purchasing documents. These documents shall describe subcontracted work, purchased materials, and services ordered in written purchasing documents. These documents shall be provided to *subcontractors* and *suppliers*. This information shall include, but shall not be limited to: (a) The type of service, material, class, grade, and other unique identification (b) The project *specifications*, *design documents*, applicable ASTM specifications, process requirements, and inspection instructions and any witness points (c) Delivery instructions and date (d) Required quality reports, certified test reports, and certificates of compliance/ conformance of purchased materials **Commentary:** It should be noted that ASTM specifications often include ordering information that the purchaser should be aware of when placing an order.			
1.10.2	**Selection of Subcontractors and Suppliers** A *documented procedure* shall be developed that describes how the certified company conducts initial and ongoing evaluation of its *subcontractors* and *suppliers*. The *procedure* for the selection of *subcontractors* for *fabrication*, *manufacturing*, or *erection* shall include a provision that requires that these entities have current AISC Certification for the type of work that is being subcontracted when certification is required in the *contract documents*. The *procedure* shall also include provisions for obtaining approval to retain a *subcontractor* who is not certified on a project-specific basis from the *owner*, *owner's designated representative for design*, and the *owner's designated representative for construction* when certification is required in the *contract documents*. *Subcontractors* and *suppliers* shall be evaluated and selected on the basis of their ability to meet subcontract requirements, the *management system* requirements, the applicable requirements of this Standard, and the requirements of the *construction documents* and referenced standards. Management shall determine: (a) Evaluation criteria (b) Reevaluation interval (c) Personnel involved in the evaluation process *Subcontractors* and *suppliers* shall be evaluated via an audit or documented acceptable past performance. As a minimum, their quality and timely, proper deliveries shall be part of the evaluation. **Commentary:** This provision of the Standard requires a *documented procedure* for the selection of *subcontractors* and *suppliers*. In general, *subcontractors* that are *fabricators*, *component manufacturers*, and *erectors* are required to be certified when subcontracted to a certified entity. Situations may arise, however, in which a certified entity is not able to subcontract with another certified entity when certification is required in the *contract documents*. In such cases, the *documented procedure* needs to address how the certified entity obtains approval to employ a noncertified *subcontractor*.			

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1.10.3	**Verification of Purchased Product, Materials and Services** A *documented procedure* for *verification* shall identify the activities necessary for ensuring that purchased products, materials, and services meet project requirements.			
1.10.4	**Control of Customer-Furnished Work and Material** If work or materials are furnished by the customer, the organization shall verify, store, and maintain them in an appropriate fashion. Customer-furnished work or material shall be protected to prevent use for other than its intended purpose. Any such work or material that is lost, damaged, or otherwise unsuitable for use shall be recorded and reported to the customer.			
1.10.5	**Purchasing Records** Purchasing documents, *subcontractor* and *supplier* qualification records, and records of the periodic evaluation of *subcontractors* and *suppliers* shall be maintained as required by Section 1.9.			
1.11	**MATERIAL IDENTIFICATION** A *documented procedure* shall be developed for material identification. Records that provide a basis for material identification shall be maintained as required by Section 1.9. *Structural steel* material shall be identified as stated in the AISC *Code of Standard Practice, unless otherwise noted in the contract documents.* Welding consumables shall be identified in accordance with the appropriate AWS specification and classification. *Coating* materials, excluding metallic *coating*, shall be identified on the container by, at a minimum, color—that is, pigment description and federal standard number or *manufacturer's* number, lot/batch number, ID/stock number, quantity of *coating* in container, date of *manufacture*, date of expiration, and *manufacturer's* name and address. Metallic *coatings* shall be identified by composition and the appropriate ASTM specification, including thermal spray *coating*. Fasteners shall be stored in containers identified by type, grade, size, and lot number(s). **Commentary**: Material that has lost identification and is no longer traceable to its grade, size, or type, or it has passed an expiration or use-by date, should be marked in a manner to prevent its inadvertent use. Markings may include paint color, signage, roped-off area, or labeling. It is a common practice to label this type of material as "uncontrolled." This means it is no longer controlled by the *quality management system* and is not to be used for contract work.			

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1.11	**MATERIAL IDENTIFICATION (Continued)** Material traceability to corresponding mill test reports (MTR) is necessary only when specifically required by contract. The *fabricator* or *manufacturer* shall develop a *documented procedure* to maintain traceability, when required, of materials from the point of receipt and throughout the course of *fabrication*. **Commentary:** MTRs, *manufacturer's* test reports, certificates of conformance for base materials, fasteners, welding consumables, and *coatings* provide material identification. In the absence of specific contract requirements, these records usually constitute sufficient evidence that the material satisfies order requirements. For traceability, the marking method may identify material type and grade or use a method that provides traceability through piece, *assembly*, or group numbering.			
1.12	**PROCESS CONTROLS** *Documented procedures* shall be developed for the *fabrication*, *manufacturing*, and *erection* processes necessary to produce a consistent, acceptable level of quality of the completed work in accordance with applicable codes and project requirements. **Commentary:** This section requires *documented procedure*(s) for those *fabrication*, *manufacturing*, and *erection* processes that affect quality. In addition to the processes listed in this section, other processes include, but are not limited to, drilling, sawing, reaming, milling, thermal and mechanical cutting, cambering, straightening, and *assembly*. Regardless of whether these processes are routinely performed, effective implementation of the following *documented procedures* is required as a minimum.			
1.12.1	**Welding** A *documented procedure* for welding shall be developed that addresses the management of: (a) Welding procedure specifications (WPS) (b) Preheat requirements (c) Procedure qualification records (PQR) (d) Storage, including ovens, handling, and identification requirements for welding consumables (e) Welder, welding operator, and tack welder qualifications and qualification test records in accordance with appropriate AWS requirements (f) Welder, welding operator, and tack welder performance records to provide *objective evidence* that the period of effectiveness has not been exceeded and satisfactory performance is consistently achieved (g) Traceability of welds to the welders who produce them *WPS*s shall be in close proximity to and used by the welders, welding operators, or tack welders. **Commentary:** Traceability of welds refers to a method to identify which welder performed the weld. Project documents may apply specific requirements for the identification of the welder and the weld they produced. This may be either a permanent stamp, a record using a weld map showing each weld and who performed the weld, or another method. Weld traceability can include marking welder ID, welder mark, or welder initials on the piece, drawing, or capturing by electronic means. Methods that allow for traceability through final weld acceptance by *quality control (QC)* can be used.			

Ref#	Criteria	MS Ref	Audit Findings	Results
1.12.2	**Bolt Installation** A *documented procedure* shall be developed for bolting. The *procedure* shall meet the requirements of the RCSC *Specification for Structural Joints Using High- Strength Bolts* and the requirements of *construction documents* and referenced standards. The documented bolting *procedure* shall include storage, pre-installation *verification*, installation, and inspection of fastener assemblies.			
1.12.3	**Material Preparation for Application of Coatings** The *documented procedure* for material preparation shall support achievement of cleanliness and surface profile required by *coating manufacturer* recommendations, product data sheets, and *contract documents,* as applicable.			
1.12.4	**Coating Application** The *documented procedure* for *coating* application shall support achievement of proper application and curing of *coatings* in accordance with *manufacturer* recommendations, product data sheets, and *contract documents*, as applicable.			
1.12.5	**Equipment Maintenance** The *documented procedure* for equipment maintenance shall, at a minimum, define the evaluation of and preventive maintenance for equipment necessary to meet work quality and delivery requirements.			
1.13	**INSPECTION AND TESTING** A *documented procedure* for inspection and testing shall be developed to ensure that the completed work meets the requirements of the *contract documents.* The *procedure* shall define receipt, in-process, and final inspection of work furnished for a project. Work determined during inspection and testing to be nonconforming shall be addressed following the *nonconformance procedure* requirements in Section 1.15. When inspecting less than 100% of the work, the *procedure* shall describe the sampling plans for each type of inspection. The plans will adjust the level and frequency of inspection at any time the required level of quality is not met.			
1.13.1	**Assignment of QC Inspections and Monitoring** Qualification requirements for *quality control (QC)* inspectors shall be defined and documented as required in Section 1.5.5. **Commentary:** *QC* inspectors should be assigned on the basis of qualification as evidenced by experience, *training*, and education. Qualification standards and certifications granted by recognized industry organizations can be used as a basis for qualification. Production personnel may be assigned to *QC* inspection duties under the following conditions: (a) They are knowledgeable in inspection methods and acceptance criteria specified for the material or work they are inspecting and hold the required certification as applicable. (b) They are aware of their responsibilities and are given time to perform them. (c) They inspect others' work. (d) Their inspections are monitored by qualified *QC* personnel.			

Ref#	Criteria	MS Ref	Audit Findings	Results
1.13.2	**Receipt Inspection** Materials received shall be compared to the purchase order requirements and the receiving documents. The receiver shall identify the material and quantity and check for visible shipping damages.			
1.13.3	**In-Process Inspection** Materials shall be inspected before the work begins. The *fabricator*, *manufacturer*, or *erector* shall employ in-process inspection plans and practices for specified process requirements and inspection acceptance criteria that are not verifiable at final inspection or for which final inspection can hinder subsequent work. In-process inspection is appropriate for processes including, but not limited to, welding, bolting, *coating* surface preparation, and *coating* application, as applicable. Compliance with documented process control *procedures* shall be monitored.			
1.13.3	**Final Inspection** Final inspection shall be conducted. *QC* inspectors qualified and responsible for final inspection shall perform the final inspection of *structural steel* and metal *components* prior to shipping in the case of *fabrication*, or after the completion of work in the case of *erection*. Final inspections shall be recorded and maintained as required by Section 1.9.			
1.13.4	**Inspection Records** The *procedure* shall indicate what records and marks are used to document inspections. In-process inspections shall be verifiable until the final inspection of the piece. The *quality records* produced shall be filed and retained as defined in the *procedure* required by Section 1.9. Inspection records shall show what was inspected, the result of the inspection, and who performed the inspection.			

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Ref#	Criteria	MS Ref	Audit Findings	Results
1.14	**CALIBRATION OF INSPECTION, MEASURING AND TEST EQUIPMENT** A *documented procedure* shall be developed to calibrate and maintain inspection, measuring and testing equipment. The *procedure* shall define equipment *calibration* frequency. However, the volt/amp meters used to verify compliance with *WPS* parameters shall be calibrated, at a minimum, every 12 months, unless a more frequent interval is required. The *procedure* shall include provisions for: (a) A unique identifier for each piece of equipment (b) A list of equipment that requires *calibration* (c) The use for each piece of equipment, including the required precision for the types of inspections, measurements, or tests made (d) *Calibration* or adjustment instructions in accordance with the *manufacturer's* recommendations (e) Frequency of *calibration* or adjustment (f) Tracking *calibration*s, adjustments, and *repairs* (g) Storage and handling of inspection, measuring, and test equipment to maintain accuracy and fitness for use (h) Identification of standards or certified equipment having a known valid relationship to recognized standards used to calibrate each listed piece of equipment. Where such standards do not exist, the basis used for *calibration* shall be documented. (i) The action to be taken when equipment does not meet the *calibration* requirements. This action includes disposition of the equipment and an evaluation of the impact on work that was measured using it. (j) Method of preventing inadvertent use of uncalibrated equipment where *calibration* is required **Commentary:** *Calibration* is a process in which an instrument or piece of equipment's accuracy is compared with a known standard. When a variation exists, a determination is made whether to adjust, *repair*, replace, or accept the instrument or piece of equipment as is. In-house *calibration* can be performed using a written instruction against national traceable standards with records maintained of the measured points and results.			

Ref#	Criteria	MS Ref	Audit Findings	Results
1.14	**CALIBRATION OF INSPECTION, MEASURING AND TEST EQUIPMENT (continued)** *Calibration* and adjustment history shall be available. Rented or borrowed equipment must be accompanied by a valid *calibration* certificate and is subject to the requirements of this section. For equipment that is damaged, dropped, knocked over, or functioning improperly, the *procedure* shall include provisions for prominently marking or tagging such equipment to preclude usage and for removing the equipment from service until it can be recalibrated, adjusted, or repaired. Whenever the accuracy of inspection, measuring, and test equipment is in question, proactive *calibration* shall occur, independent of the *manufacturer's* recommendations. The precision required of any piece of equipment shall be sufficient to satisfy the acceptance standards of the project *specifications* or industry standards. Records of *calibration* shall be maintained as required by Section 1.9. **Commentary:** *Calibration* or adjustment history records include: • Evidence that the *calibration* was performed and traceable to a national or international standard • Identification of the equipment that was calibrated • Who performed the *calibration* • The date of the *calibration* • The date the *calibration* expires or the date the next *calibration* is due The *calibration* record should also include evidence of any adjustments that were performed during the *calibration* process.			
1.15	**CONTROL OF NONCONFORMANCES** A *documented procedure* shall be developed to identify and control *nonconformances*. Records of *nonconformances* shall be maintained as required by Section 1.9.			
1.15.1	**Nonconformance with Management Systems** A *nonconformance* related to the performance of the *management system* shall be documented to the detail level described by the *procedure*. These *nonconformances* may be identified by the *management systems* during external audits or by internal audits.			

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Ref#	Criteria	MS Ref	Audit Findings	Results
1.15.2	**Nonconforming Work** The *procedure* for nonconforming work shall provide for identification, *docu- mentation*, evaluation, treatment of nonconforming work, and notification of the relevant functions concerned. Nonconforming work may also be identified in a quality inspection report. These reports, when received, become quality inspection records. Nonconforming work shall be marked as soon as practical after it is discovered. Records shall be kept of the pieces affected, the nature of the *nonconformance*, the treatment selection, authorization, and reinspection results if applicable. The treatment of nonconforming work may include: (a) Redesign and *rework*, as approved by the responsible party, and as required in the *contract documents* (b) *Repair*, as approved by the responsible party, and as required in the *contract documents* (c) Use as-is, as approved by the responsible party, and as required in the *contract documents* (d) Scrap If the treatment is *rework* or *repair*, the result shall be inspected in accordance with project requirements, as well as per the *quality control* process.			

Ref#	Criteria	MS Ref	Audit Findings	Results
1.16	**CORRECTIVE ACTION** A *documented procedure* shall be developed for *corrective action* to improve quality. Any *corrective action* taken shall be to the degree appropriate to the magnitude of problems and commensurate with the risks to quality. The *documented procedure* shall include periodic review of records or summaries of *nonconformances* and of internal and external quality audit reports for determination and initiation of *corrective actions*. The *documented procedure* shall address these steps: (a) Document a *corrective action* request (CAR) that includes the *nonconformance* to be addressed by the *corrective action* and the requirement that has not been met. The *procedure* shall define the functional positions authorized to issue a CAR and initiate the *corrective action* process. (b) Assign responsibility and establish a time frame for the response to a CAR. (c) Investigate and document the scope of the *nonconformance*, root causes, and *corrective measures* taken, and list the actions to be taken to prevent recurrence. (d) Communicate the *corrective action* request and resolution to *executive management* and appropriate members of the organization. (e) Follow up the *corrective action* taken with periodic monitoring to ensure the *corrective action* is implemented and is effective. *Corrective action* shall be applied when: (a) There is a *nonconformance* that is repetitive in nature as identified by periodically reviewing *nonconformance* reports or summaries for negative trends (b) Process *nonconformances* are found during the internal and external quality audits indicating that the *quality management systems* may not be implemented and functioning as stated in the *quality manual* (c) *Nonconformance* with the *quality management system* is found during the day-to-day execution of the system (d) *Nonconformance* is unacceptable as determined by management (e) A customer complaint has been investigated and *corrective action* has been determined to be necessary Records of *corrective actions* shall be maintained as required by Section 1.9.			
1.17	**HANDLING, STORAGE AND DELIVERY OF MATERIALS, FABRICATED WORK, AND COMPONENTS** Materials, fabricated work, and *components* shall be stored and shipped to avoid damage and deterioration as required by the AISC *Code of Standard Practice*. Materials, fabricated work, and *components* shall be protected to prevent use other than its intended purpose. Any such material that is lost, damaged, or otherwise unsuitable for use shall be recorded and reported as appropriate. **Commentary:** AISC *Code of Standard Practice* Sections 5.1.2 and 5.1.3 allow a *fabricator* to receive material that does not conform to the project requirements with the expectation that corrective procedures will be used to bring the material into conformity. Project requirements may require approval from the *structural engineer of record* before applying corrective procedures. When nonconforming material is received as such, it should be clearly identified and segregated from conforming material.			

Ref#	Criteria	MS Ref	Audit Findings	Results
1.18	**TRAINING** Personnel responsible for functions that affect quality, including, but not limited to, project managers, field/shop supervisors, detailers, inspectors, welding personnel, fitters, painters, riggers, signal persons, and crane operators, shall receive appropriate initial and periodic documented training. Personnel providing training shall have appropriate training or experience in the subject they are teaching. Training course outlines include the subject and the key points. Evaluation of trainee comprehension of course material and *documentation* of successful completion is required. *Training* records shall be maintained as required by Section 1.9.			
1.19	**INTERNAL AUDIT** A *documented procedure* shall be developed for the control and management of internal audits. An internal audit of each section of the *quality management system* shall be performed at least once a year to evaluate the compliance and the effectiveness of implementation. Sections of the *management systems* may be audited at different times and frequencies, provided that all sections of the *management systems* are audited annually. The management representative or a qualified individual, independent of the function being audited, shall perform the audit and produce a written record of the audit result from each section. Records of internal audits shall be maintained as required by Section 1.9.			
	CHAPTER 2 **BUILDING FABRICATOR REQUIREMENTS**			
2.3	**References** The ability to work to and meet the requirements of the latest edition of ANSI/ AISC 360 *Specification for Structural Steel Buildings* shall be demonstrated. **Commentary:** The *fabricator* should also have the following references available as applicable: (a) ANSI/AISC 341 *Seismic Provisions for Structural Steel Buildings* (b) ANSI/AISC 358 *Prequalified Connections for Special and Intermediate Steel Moment Frames for Seismic Applications* (c) AWS D1.4/D1.4M *Structural Welding Code—Reinforcing Steel* (d) AWS D1.8/D1.8M *Structural Welding Code—Seismic Supplement* (e) SSPC *Steel Structures Painting Manual, Volume I, Good Painting Practice* (f) SSPC *Steel Structures Painting Manual, Volume II, Systems and Specifications*			

Ref#	Criteria	MS Ref	Audit Findings	Results
2.5.5.1	**Buildings, Workspace, Equipment and Associated Utilities** A *fabrication* facility shall consist of areas and buildings that provide space for the routine functions considered to be part of steel *fabrication*. The work areas and buildings, including housekeeping, ventilation and clean air supply, and electrical supply, shall be conducive to achieving consistent quality work. The *fabricator* shall have under their control the equipment and software necessary to perform *fabrication* and inspection consistent with the *contract documents*.			
	CHAPTER 3 **METAL COMPONENT MANUFACTURER REQUIREMENTS**			
3.3	**References** The ability to work to and meet the requirements of the latest edition of the following documents shall be demonstrated: (a) ANSI/AISC 360 *Specification for Structural Steel Buildings* (b) AASHTO/ASTM standards applicable to the *component manufacturer*'s product and/or *contract documents* for verification purposes **Commentary:** The *manufacturer* should also have the following references available as applicable: (a) AWS D1.2/ D1.2M *Structural Welding Code—Aluminum* (b) AWS D1.3/D1.3M *Structural Welding Code—Sheet Steel* (c) AASHTO/AWS D1.5M/D1.5 *Bridge Welding Code* (d) AWS D1.6/D1.6M *Structural Welding Code—Stainless Steel* (e) SSPC *Steel Structures Painting Manual, Volume I, Good Painting Practice* (f) SSPC *Steel Structures Painting Manual, Volume II, Systems and Specifications*			
3.5.5.1	**Buildings, Workspace, Equipment and Associated Utilities** A *manufacturing* facility shall consist of areas and buildings that provide space for routine functions considered part of *component manufacturing*. Work areas and buildings shall be conducive to achieving consistent work quality. The *manufacturer* shall have under their control the equipment and software necessary to perform *manufacturing* and inspection consistent with the specifications and standards applicable to the work.			
3.7.8	**Design Procedure** Where *component* design is provided by the *manufacturer*, a *documented procedure* shall be developed to define the design process. The *procedure* shall describe steps in the design development, review, and *verification* phases of the process. The *procedure* shall: (a) Define methods for determining *component* requirements from *contract documents*, customer and industry input, regulatory and code requirements, and similar *component* designs. (b) Define a design review process to identify and propose solutions for *nonconformances*. Identify the individuals responsible and keep records of the design review process. (c) Define methods to identify, document, evaluate, and approve design changes before implementation. (d) Describe a means of validating the function of the resulting *component* with respect to intended uses and identified *component* requirements. Identify individuals responsible and keep records of the validation process.			

Ref#	Criteria	MS Ref	Audit Findings	Results
3.7.9	**Design for Standard Components** For standard *components* not specific to any one project, the *manufacturer* shall have on file and available to the customer a set of design calculations reviewed and prepared and sealed by a *registered design professional* to signify that the designed *component* meets the current applicable code requirements for its intended use. Any design tables or design processes published with the *component* literature shall also be reviewed and stamped by a *registered design professional*. *Manufacturing documents* for these *components* shall include a statement that the *component* details are based on designs that have been reviewed and stamped by a *registered design professional* and are on file with the *manufacturer*.			
3.7.10	**Design for Nonstandard Components** For *components* that are job specific, the *manufacturer* shall retain the services of a registered professional to prepare and seal the site-specific design of the *component*. The registered professional shall also review the *manufacturing documents* produced for the *component* and verify their consistency with the design. The results of this review shall be indicated on the *component manufacturing documents*.			
	CHAPTER 4 **BRIDGE FABRICATOR REQUIREMENTS**			
4.2	**Scope** This Standard establishes three categories of bridges: simple, intermediate, and advanced. *Fabricators* producing intermediate bridges, advanced bridges, or fracture-critical members shall be required to meet supplemental requirements in Chapters 4.I, 4.A, and 4.F, as applicable. Bridge category descriptions: Simple bridges consist of unspliced rolled sections, folded steel plate girders (FSPG), and press brake tub girders (PBTG). Intermediate bridges are those that require a high level of *fabrication* expertise, including, but not limited to, techniques for geometric control, bending, curving, welding, and handling. **Commentary:** Common examples of intermediate bridges include: (a) A rolled beam bridge with field or shop splices, either straight or with a radius greater than 500 ft (150 m) (b) A built-up I-shaped plate girder bridge with constant web depth (except for dapped ends), with or without splices, either straight or with a radius greater than 500 ft (150 m) (c) A built-up I-shaped plate girder with variable web depth (e.g., haunched), either straight or with a radius greater than 1,000 ft (300 m) (d) A truss with a length of 200 ft (60 m) or less that is entirely or substantially preassembled at the certified facility and shipped in no more than three subassemblies (e) An FSPG or PBTG bridge with field or shop splices that is entirely or substantially preassembled at the certified facility			

Ref#	Criteria	MS Ref	Audit Findings	Results
4.2	**Scope (continued)** Advanced bridges are more complex bridge structures than simple or intermediate bridges, and they require a higher level of *fabrication* expertise. **Commentary:** Common examples of advanced bridges include: (a) Tub or trapezoidal box girders (b) Closed box girders (c) Large or non-preassembled trusses (d) Arches (e) Bascule bridges (f) Cable-supported bridges (g) Movable bridges (h) Bridges with a particularly tight curve radius			
4.3	**References** The ability to work to and meet the requirements of the latest edition of the follow- ing documents shall be demonstrated: (a) AASHTO/AWS D1.5M/D1.5 *Bridge Welding Code* (b) ASTM F3125/F3125M *Standard Specification for High Strength Structural Bolts and Assemblies, Steel and Alloy Steel, Heat Treated, Inch Dimensions 120 ksi, 144 ksi, and 150 ksi Minimum Tensile Strength, and Metric Dimensions 830 MPa and 1040 MPa Minimum Tensile Strength* (c) ASTM F3148 *Standard Specification for High Strength Structural Bolt Assemblies, Steel and Alloy Steel, Heat Treated, 144ksi Minimum Tensile Strength, Inch Dimensions* **Commentary:** The *fabricator* should also have the following references avail- able as applicable: (a) AASHTO/NSBA G4.1 *Steel Bridge Fabrication QC/QA Guidelines* (b) AREMA *Manual for Railway Engineering, Volume II—Chapter 15, Steel Structures* (c) FHWA *Bridge Welding Reference Manual*, Publication No. FHWA-HIF- 19-088, September 2019			

Ref#	Criteria	MS Ref	Audit Findings	Results
4.5.4.1	**Personnel** In addition to the requirements in Section 1.5.4, the following additional qualification requirements shall apply: (a) For production and *quality assurance (QA)* management functions, at least five years of steel *fabrication* experience that includes an appropriate amount of *training* (b) For *quality control (QC)* and purchasing management functions and for *detailing checkers*, at least three years of steel *fabrication* experience that includes an appropriate amount of *training* **Commentary:** Depending on the education level of the personnel, the com- bination of experience and *training* may vary depending on the tasks the individual undertakes. It could include more years of hands-on experience with less *training*, or it could be less hands-on experience with more *training*. The *fabricator* shall have the following personnel on staff or available under contract that are certified in accordance with the *fabricator's* nondestructive testing (NDT) program: (a) At least one Certified Level III NDT administrator for each NDT method per- formed in the shop (b) At least one Certified Level II technician for each NDT method performed in the shop **Commentary:** ASNT Recommended Practice No. SNT-TC-1A provides guidelines for employers to establish in-house certification programs for the qualification and certification of NDT personnel. The *fabricator* shall have *documented procedures* for certifying and updating NDT personnel employed by the *fabricator*. Alternatively, the *fabricator's documented procedures* shall describe how they review the methods and/or written practices of contractors as suitable to subcontract to their organization. The *fabricator* shall have enough AWS Certified Welding Inspectors or other personnel as permitted by AASHTO/AWS D1.5M/D1.5, "Inspection Personnel Qualification" to monitor all shifts on which welding is performed. The *fabricator* shall have a competent welding technician on staff with extensive knowledge and experience with or education in welding processes, procedures, and equipment and with the development, preparation, qualification, and execution of welding procedure specifications.			
4.5.5.2	**Buildings, Workspace, Equipment and Associated Utilities** A *fabrication* facility shall consist of areas and buildings that provide space for the routine functions considered to be part of steel bridge *fabrication*. The work areas and buildings, including housekeeping, ventilation and clean air supply, and electrical supply, shall be conducive to achieving consistent quality work. The *fabricator* shall have under their control the equipment and software necessary to perform *fabrication* or *manufacturing* and inspection consistent with the *contract documents*.			

Ref#	Criteria	MS Ref	Audit Findings	Results
4.7.8	**Preparation of Fabrication and Erection Documents** *Fabrication* and *erection documents* shall incorporate the contract requirements, specifications, codes, and relevant standards to procure materials, and fabricate and erect the structure. To ensure this, a *documented procedure* for preparation of these documents shall be developed that describes: (a) How project requirements are reviewed and incorporated (b) How the *fabricator* coordinates, proposes changes, and tracks information with the general contractor or *owner*, such as change orders and *requests for information (RFI)* (c) How the associated resolutions are tracked and controlled			
4.11.1	**Traceability** The *fabricator's documented procedures* for identification of material and for material traceability shall include provisions for maintaining heat and mill test report (MTR) identity of material throughout the *fabrication* process.			
4.12.2	**Bolt Installation** The *documented procedure* for bolting shall meet the requirements for rotational capacity testing as required by: (a) ASTM F3125/F3125M *Standard Specification for High Strength Structural Bolts and Assemblies, Steel and Alloy Steel, Heat Treated, Inch Dimensions 120 ksi, 144 ksi, and 150 ksi Minimum Tensile Strength, and Metric Dimensions 830 MPa and 1040 MPa Minimum Tensile Strength* (b) ASTM F3148 *Standard Specification for High Strength Structural Bolt Assemblies, Steel and Alloy Steel, Heat Treated, 144ksi Minimum Tensile Strength, Inch Dimensions*			
	CHAPTER 4.I **SUPPLEMENTAL REQUIREMENTS FOR FABRICATORS OF INTERMEDIATE BRIDGES**			
4.I	Eligible *fabricators* shall have either: (a) Supplied plate girder spans with field splices for highway or railroad bridges within the last five years, or (b) Established a *documented training* program for the purpose of communicating intermediate bridge work functions to the work forces and demonstrated capability to fabricate intermediate bridges. *Training* shall include *detailing*, purchasing, and project management functions. **Commentary:** Users of this Standard are encouraged to evaluate *fabricator* capability on a project-specific basis.			
4.I.5.5.1	**Buildings, Workspace, Equipment and Associated Utilities** Equipment shall include automatic, mechanized or semiautomatic welding equipment.			
4.I.7.1	**Detailing Standards** The *detailing* standards shall define the *fabricator's* method for presenting information on shop *assembly* drawings.			

Ref#	Criteria	MS Ref	Audit Findings	Results
4.I.7.6	**Detailing Functions** *Detailing* personnel shall have an understanding of bridge geometry, including, but not limited to, vertical and horizontal alignment, cross-slope, and roadway transitions.			
4.I.12.1	**Welding** The *fabricator's documented procedure* for welding shall include a distortion control program.			
4.I.12.6	**Laydown/Assembly** The *fabricator's documented procedure* for shop *assembly* of field connections shall include, at a minimum, the following items: (a) Provisions for control of assembled dimensions for both vertical and horizontal geometry (b) Provisions for control of accuracy of drilling and reaming of field connections (c) *Documented procedures*, including reference drawings, for matchmarking shop-assembled pieces (d) Provisions for assuring the accuracy of numerically controlled equipment, if *contract documents* permit the use of such equipment in lieu of physical *assembly*			
	CHAPTER 4.A **SUPPLEMENTAL REQUIREMENTS FOR FABRICATORS OF ADVANCED BRIDGES**			
4.A.2	**Scope** Eligible *fabricators* shall have either: (a) Supplied advanced bridges for highway or railroad applications within the last five years, or (b) Supplied intermediate bridges for highway or railroad use within the last five years, established a *documented training* program for the purpose of communicating advanced bridge work functions to the work forces, and demonstrated capability to fabricate advanced bridges. *Fabricators* of advanced bridges shall also meet the supplemental requirements of Sections 4.I.5, 4.I.7, and 4.I.12. **Commentary:** Users of this Standard are encouraged to evaluate *fabricator* capability on a project-specific basis.			

Ref#	Criteria	MS Ref	Audit Findings	Results
4.A.6	**Construction Document Review and Communication** The *fabricator's documented procedure* shall include a process for communicating with individuals in the *fabricator's* organization, the general contractor, and the *owner* regarding special *fabrication*-related requirements for advanced bridges, including: (a) Shop assemblies (b) Dimensional control and *verification* (c) Welding (d) Nondestructive testing (NDT) (e) High-performance materials (f) *Erection* considerations (g) Other atypical or special job requirements Decisions made in the process of these communications shall be recorded and approved by the appropriate parties, and the record shall be distributed to the appropriate parties. This distribution shall be controlled in accordance with Sections 1.6 and 1.8. **Commentary:** High-performance steels are designated with an HPS such as ASTM A709 HPS 50W, ASTM A709 HPS 70W, and ASTM A709 HPS 100W. Other specified steels may also be contract-specific materials not addressed by AWS D1 welding codes.			
	CHAPTER 4.F **SUPPLEMENTAL REQUIREMENTS FOR FABRICATORS OF FRACTURE CRITICAL MEMBERS**			
4.F	**Scope** Eligible *fabricators* shall have either: (a) Supplied fracture-critical members in accordance with AASHTO/AWS D1.5M/D1.5 within the last five years, or (b) Established a *documented training* program for the purpose of communicating fracture-critical work functions to the work forces and demonstrated capability to fabricate fracture-critical members.			
4.F.5.7	**Quality Manual** The *quality manual* shall include or reference a written fracture control plan meeting the requirements of AASHTO/AWS D1.5M/D1.5.			
4.F.7.1	**Detailing Standards** The *detailing* standards for preparation of bills of material shall include whether the material is to be used for fracture-critical applications. The *detailing* standards for the *fabricator's fabrication* and *erection documents* shall define the manner of identifying fracture-critical welds.			
4.F.10.1	**Purchasing Data** The *fabricator's* written purchasing documents shall identify material to be used for fracture-critical applications.			

Ref#	Criteria	MS Ref	Audit Findings	Results
4.F.11	**Material Identification** The *fabricator's documented procedures* for identification of material and for material traceability shall include provisions for maintaining heat and mill test report (MTR) identity of fracture-critical material throughout the *fabrication* process. The *procedure* shall address how fracture-critical material is identified at receipt and throughout *fabrication* by unique mill piece or plate number. Further, the *procedure* shall also address how consumables purchased for fracture-critical welding are identified.			
4.F.12.1	**Welding** The *fabricator's documented procedure* for welding shall include: (a) Procedure qualification records (PQR) for fracture-critical welding procedure specifications (WPS) (b) Fracture-critical provisions for welding procedure qualification, preheat, and storage of consumables			
4.F.13	**Inspection and Testing** The *fabricator's documented procedure* shall include provisions for inspection of fracture-critical welds.			
4.F.15.2	**Nonconforming Work** The *fabricator's documented procedure* shall include provisions for critical and noncritical *repairs* of fracture-critical welds in accordance with AASHTO/AWS D1.5M/D1.5.			
	CHAPTER 5 **ERECTOR REQUIREMENTS**			
5.3	**References** The ability to work to and meet the requirements of the latest edition of ANSI/ AISC 360 *Specification for Structural Steel Buildings* shall be demonstrated.			
5.5.4.3	**Erection Tools and Equipment** The *erector* shall have under their control the tools and equipment necessary to perform the work, and the tools and equipment shall be maintained at the level necessary to produce the required quality.			
5.12.3	**Material Preparation for Application of Coatings** The following requirements apply for *erectors* in lieu of the requirements pro- vided in Section 1.12.3. When the *erector's* work includes *coating* application or touch-up of *coatings*, the *documented procedure* for material preparation shall support achievement of cleanliness and the surface profile required by *coating manufacturer* recommendations, product data sheets, and *contract documents*, as applicable.			
5.12.4	**Coating Application** The following requirements apply for *erectors* in lieu of the requirements provided in Section 1.12.4. When the *erector's* work includes *coating* application or touch-up of *coatings*, the *documented procedure* for *coating* application shall support achievement of proper application and curing of *coatings* in accordance with *manufacturer* recommendations, product data sheets, and *contract documents*, as applicable.			

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Ref#	Criteria	MS Ref	Audit Findings	Results
5.12.6	**Erection Plan** The *erector* shall prepare an *erection plan* for every project. The *erection plan*, in whole or in part, may be described graphically or in text. The *erection plan* shall include the following information as appropriate for the project: (a) Project name and location (b) Indication of access for material delivery and equipment delivery, including lay-down, shake-out, and field-*assembly* areas (c) Sequence of *erection* (d) Dimensions and locations of cranes or other lifting equipment (e) Required site conditions for the crane location and confirmation of adequate base support for the crane (f) Sizes, model names or numbers, and capacity charts for lifting equipment (g) Information regarding the heaviest lift and its radius, the longest radius and its lift weight, and the boom configuration for each at every location of the lifting equipment (h) Indicate critical lifts, if any, and include the critical lift protocol or procedure (i) Requirements for multi-lift rigging (j) Types of slings to be used and, if more than one type, the locations in which they will be used (k) Rigging information for atypical lifts (l) Designation of crane paths from position to position, indicating load travel paths, swing restrictions, and personnel exclusion zones (m) Designation of space required for field *assembly* prior to *erection* (n) Identification of special fastening sequences and/or methods (o) Identification of special or atypical connections (p) Traffic control notes (q) Identification of specification requirements for *erection*, such as plumbing tolerances smaller than those stipulated in the AISC *Code of Standard Practice* (r) Provisions for temporary supports as required by the AISC *Code of Standard Practice* Section 7.10.3 (s) Falsework requirements and corresponding design calculations (t) Jacking layout and jacking procedure (u) Notation of special problems due to overhead restrictions, underground utilities, barriers to crane tail swing, etc. The *erection plan* shall be reviewed before the start of *erection* by the *erector's* project management team and be available to the employees assigned to the project. All revisions shall be approved by the site superintendent and communicated to affected personnel at the time of the revision. In accordance with the AISC *Code of Standard Practice* and *contract documents*, the *erector* shall have *documentation* or other evidence that the required information in AISC *Code of Standard Practice* Section 7.10 has been provided.			
	SEISMIC ERECTION ENDORSEMENT			

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Ref#	Criteria	MS Ref	Audit Findings	Results
5.3.1	For the *erection* of structures requiring the use of ANSI/AISC 341 *Seismic Provisions for Structural Steel Buildings*, the *erector* shall have available and shall demonstrate the ability to work to and meet the requirements of: (a) ANSI/AISC 341 *Seismic Provisions for Structural Steel Buildings* (b) AWS D1.8/D1.8M *Structural Welding Code—Seismic Supplement*			
	METAL DECK INSTALLATION ENDORSEMENT			
5.3.2	When the *erector's* work includes the installation of metal deck, the *erector* shall have available and demonstrate the ability to work to and meet the requirements of: (a) ANSI/SDI *QA/QC Standard for Quality Control and Quality Assurance for Installation of Steel Deck* (b) AWS D1.3/D1.3M *Structural Welding Code—Sheet Steel* Instructions for metal deck installation shall be provided in the *erection plan*.			
	BRIDGE ERECTION ENDORSEMENT			
5.3.3	For the *erection* of bridges, the *erector* shall have available and demonstrate the ability to work to and meet the requirements of: (a) AASHTO/AWS D1.5M/D1.5 *Bridge Welding Code* (b) ASTM F3125/F3125M *Standard Specification for High Strength Structural Bolts and Assemblies, Steel and Alloy Steel, Heat Treated, Inch Dimensions 120 ksi, 144 ksi, and 150 ksi Minimum Tensile Strength, and Metric Dimensions 830 MPa and 1040 MPa Minimum Tensile Strength* (c) *ASTM F3148 Standard Specification for High Strength Structural Bolt Assemblies, Steel and Alloy Steel, Heat Treated, 144ksi Minimum Tensile Strength, Inch Dimensions* **Commentary:** The *erector* should also have the following references available as applicable: (a) AASHTO/NSBA S10.1 *Steel Bridge Erection Guide Specification* (b) AREMA *Manual for Railway Engineering, Volume II—Chapter 15, Steel Structures*			
	CHAPTER 6 **HYDRAULIC METAL STRUCTURES FABRICATOR REQUIREMENTS**			

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Ref#	Criteria	MS Ref	Audit Findings	Results
6.2	**Scope** This Standard establishes two categories of hydraulic metal structures: standard and advanced. *Fabricators* producing standard hydraulic metal structures shall be required to meet the requirements in Chapter 6 and may be required to meet supplemental requirements in Chapter 6.F. *Fabricators* producing advanced hydraulic metal structures shall be required to meet the requirements in Chapter 6 and the supplemental requirements in Chapters 6.A. and 6.F. Hydraulic Metal Structure category descriptions: Standard hydraulic metal structures are those that do not require sophisticated measures such as specialized equipment and techniques for geometric control, machining, welding, and handling. **Commentary:** Common examples of standard hydraulic metal structures may include: (a) Sluice gates (b) Knife gates (c) Spillway gates (d) Bulkheads and stop logs (e) Needle beams (f) Lock culvert valves Advanced hydraulic metal structures are those requiring sophisticated measures in *fabrication* and *erection*, particularly with regard to size, curvature, plate thickness, distortion, machining, *fabrication* access, geometric tolerances, and constraint conditions. **Commentary:** Common examples of advanced hydraulic metal structures include: (a) Miter gates (b) Vertical lift gates (c) Roller gates (d) Hoisting gates (e) Bonneted gates (f) Sector gates (g) Submersible Tainter gates			

Ref#	Criteria	MS Ref	Audit Findings	Results
6.3	**References** The ability to work to and meet the requirements of the latest edition of the following documents shall be demonstrated: (a) ANSI/ASNT CP-189 *Standard for Qualification and Certification of Nondestructive Testing Personnel* or ASNT *Recommended Practice No. SNT-TC-1A Personnel Qualification and Certification in Nondestructive Testing* (b) ASTM F3125/F3125M *Standard Specification for High Strength Structural Bolts and Assemblies, Steel and Alloy Steel, Heat Treated, Inch Dimensions 120 ksi, 144 ksi, and 150 ksi Minimum Tensile Strength, and Metric Dimensions 830 MPa and 1040 MPa Minimum Tensile Strength* (c) ASTM F3148 *Standard Specification for High Strength Structural Bolt Assemblies, Steel and Alloy Steel, Heat Treated, 144ksi Minimum Tensile Strength, Inch Dimensions* **Commentary:** The *fabricator* should also have the following references available, as applicable: • UFGS 05 59 20 *Fabrication of Hydraulic Steel Structures* • AWS D1.2/D1.2M *Structural Welding Code—Aluminum* • AWS D1.3/D1.3M *Structural Welding Code—Sheet Steel* • AASHTO/AWS D1.5M/D1.5 *Bridge Welding Code* • AWS D1.6/D1.6M *Structural Welding Code—Stainless Steel*			
6.5.5.1	**Personnel** The following qualification requirements shall apply: (a) For production and *quality assurance (QA)* management functions, at least five years of *fabrication* experience, that includes an appropriate amount of *training* (b) For *quality control (QC)* and purchasing management functions and for *detailing checkers*, at least three years of *fabrication* experience that includes an appropriate amount of *training.* **Commentary:** Depending on the education level of the personnel, the com- bination of experience and *training* may vary depending on the tasks the individual undertakes. It could include more years of hands-on experience with less *training*, or it could be less hands-on experience with more *training*.			

Ref#	Criteria	MS Ref	Audit Findings	Results
6.5.5.1	**Personnel (continued)** The *fabricator* shall have the following personnel on staff or available under con- tract that are certified in accordance with the *fabricator's* nondestructive testing (NDT) program: (a) At least one Certified NDT Level III for each NDT method performed in the shop (b) At least one Certified NDT Level II for each NDT method performed in the shop The *fabricator* shall have *documented procedures* for certifying and updating NDT personnel employed by the *fabricator*. Alternately, the *fabricator's documented procedures* shall describe how they review the methods and/or written practice of firms as suitable to subcontract to their organization. **Commentary:** ASNT *Recommended Practice No. SNT-TC-1A* provides guidelines for employers to establish in-house certification programs for the qualification and certification of NDT personnel. The *fabricator* shall have an individual on staff who has knowledge and experience with: (a) Welding processes, procedures, welding equipment, and welder performance qualifications (b) Development, preparation, qualification, and execution of welding procedure specifications In addition, the *fabricator* shall have AWS Certified Welding Inspectors or other personnel as permitted by AWS D1.1/D1.1M, "Qualification of Inspection Personnel" available to monitor all shifts on which welding is performed.			
6.5.5.2	**Buildings, Workspaces, Equipment, and Associated Utilities** A *fabrication* facility shall consist of areas and buildings that provide adequate space for the routine functions considered to be part of hydraulic metal structure *fabrication*. The work areas and buildings (including housekeeping, ventilation and clean air supply, and electrical supply) shall be conducive to achieving consistent quality work. The *fabricator* shall have under their control the equipment and software necessary to perform *fabrication* and inspection consistent with the *contract documents*. Equipment shall include automatic, mechanized, or semiautomatic welding equipment.			

Ref#	Criteria	MS Ref	Audit Findings	Results
6.6	**Construction Document Review and Communication** The *fabricator's documented procedure* shall include a process for communicating with individuals in the *fabricator's* organization, the general contractor, and the owner regarding special *fabrication*-related requirements for hydraulic metal structures, including: (a) Shop assemblies *(b)* Dimensional control and *verification* (c) Welding *(d) NDT* (e) High-performance materials (f) *Erection* and installation considerations (g) Other atypical or special job requirements Decisions made in the process of these communications shall be approved by and distributed to the appropriate parties. This distribution shall be controlled in accordance with Sections 1.6 and 1.8. **Commentary:** High-performance steels are designated with an HPS such as ASTM A709 HPS 50W, ASTM A709 HPS 70W, and ASTM A709 HPS 100W. Other specified steels may also be contract-specific materials not addressed by AWS D1 welding codes.			
6.7.1	**Detailing Standards** The *detailing* standards shall define the *fabricator's* method for presenting information on shop *assembly* (blocking) documents or other *fabrication documents*.			
6.7.6	**Detailing Functions** *Detailing* personnel shall have an understanding of geometry, machining methods and finishes, dimensioning formats, final tolerances, and materials related to the *fabrication* of the type of hydraulic projects the *fabricator* may undertake.			
6.7.8	**Preparation of Fabrication Documents** Any *fabrication documents* shall incorporate all contract requirements, *specifications*, codes, and relevant standards to procure materials and fabricate the structure. To ensure this, a *documented procedure* for preparation of *fabrication documents* shall be developed, which describes: (a) How project requirements are reviewed and incorporated. (b) How the *fabricator* coordinates, proposes changes, and tracks information with the general contractor or *owner* (e.g., change orders and *RFIs*) and how the associated resolutions are tracked and controlled.			
6.12.1	**Welding** The *documented procedure* for welding shall include welding of dissimilar metals. Welding procedure specifications (WPS) and supporting procedure qualification records (PQR) shall be available for the dissimilar metals to be joined, including those not addressed by AWS D1 welding codes.			
	CHAPTER 6.A **ADVANCED HYDRAULIC METAL STRUCTURES FABRICATOR REQUIREMENTS**			

Ref#	Criteria	MS Ref	Audit Findings	Results
6.A.3	**References** The ability to work to and meet the requirements of the latest edition of: (a) ASTM F3125/F3125M *Standard Specification for High Strength Structural Bolts and Assemblies, Steel and Alloy Steel, Heat Treated, Inch Dimensions 120 ksi, 144 ksi, and 150 ksi Minimum Tensile Strength, and Metric Dimensions 830 MPa and 1040 MPa Minimum Tensile Strength* (b) ASTM F3148 *Standard Specification for High Strength Structural Bolt Assemblies, Steel and Alloy Steel, Heat Treated, 144ksi Minimum Tensile Strength, Inch Dimensions*			
6.A.5.5.1	**Personnel** The *fabricator* shall have AWS Certified Welding Inspectors present to monitor all shifts on which welding is performed. Alternate qualifications described in AWS D1.1, "Qualification of Inspection Personnel," are not permitted for *fabricators* of advanced hydraulic metal structures.			
6.A.12.1	**Welding** The *fabricator's documented procedure* for welding shall include provisions for distortion control.			
6.A.12.2	**Bolt Installation** The *documented procedure* for bolting shall meet the requirements for rotational capacity testing as required by: (a) ASTM F3125/F3125M *Standard Specification for High Strength Structural Bolts and Assemblies, Steel and Alloy Steel, Heat Treated, Inch Dimensions 120 ksi, 144 ksi, and 150 ksi Minimum Tensile Strength, and Metric Dimensions 830 MPa and 1040 MPa Minimum Tensile Strength* (b) ASTM F3148 *Standard Specification for High Strength Structural Bolt Assemblies, Steel and Alloy Steel, Heat Treated, 144ksi Minimum Tensile Strength, Inch Dimensions*			
6.A.12.6	**Trial Assembly** The *fabricator's documented procedure* for trial *assembly* of field connections shall include, at a minimum, the following items: (a) Provisions for control of assembled dimensions. (b) Provisions for control of accuracy of drilling and reaming of shop connections. (c) *Documented procedures*, including reference drawings, for match-marking shop-assembled pieces. (d) Provisions for assuring the accuracy of numerically controlled equipment, if *contract documents* permit the use of such equipment in lieu of physical *assembly*.			
6.A.12.7	**Machining** A *documented procedure* shall be developed for machining, whether it is performed by the *fabricator* or a *subcontractor*.			
	CHAPTER 6.F **FABRICATORS OF FRACTURE-CRITICAL MEMBERS OF HYDRAULIC METAL STRUCTURES REQUIREMENTS**			

Ref#	Criteria	MS Ref	Audit Findings	Results
6.F.3	**References** The ability to work to and meet the requirements of the latest edition of AASHTO/AWS D1.5M/D1.5 *Bridge Welding Code* shall be demonstrated.			
6.F.5.7	**Quality Manual** The *quality manual* shall include or reference a written fracture control plan (FCP).			
6.F.7.1	**Detailing Standards** The *detailing* standards for preparation of bills of material shall include how fracture-critical members (FCM) are identified in bills of material. FCM shall be individually identified. **Commentary:** Materials such as castings, stainless steel, aluminum, and steels other than ASTM A709 do not have properties specified for meeting the requirements of FCM. The *detailing* standards shall define the manner of identifying fracture-critical welds.			
6.F.10.1	**Purchasing Data** The *fabricator's* written purchasing documents shall identify material to be used for fracture-critical applications. **Commentary:** Purchase orders no longer need to specify killed steel and prohibit mill *repairs* because they are now covered in ASTM A709. Purchase orders for fracture-critical material should reference the applicable requirements in ASTM A709. If non-ASTM A709 material is specified for FCM, the *owner's* representative for design should indicate which properties and test methods are required. Fracture-critical specific Charpy V-notch testing is not required in the specification of some materials. Without a published specification or supporting testing or research, the specifier should define these requirements for other materials like castings, stainless steel, or aluminum.			
6.F.11	**Material Identification** The *fabricator's documented procedures* for identification of material and for material traceability shall include provisions for maintaining heat and *MTR* identity of fracture-critical material throughout the *fabrication* process. The *procedure* shall address how fracture-critical material is identified at receipt and throughout *fabrication* by unique mill piece or plate number. Further, the *procedure* shall also address how consumables purchased for fracture-critical welding are identified.			

Ref#	Criteria	MS Ref	Audit Findings	Results
6.F.12.1	**Welding** The *fabricator's documented procedure* for welding shall include: (a) Fracture-critical provisions for welding *procedure* qualification, preheat, and storage of consumables. (b) Provisions for the creation and implementation of a FCP. The FCP shall be in accordance with the requirements of AASHTO/AWS D1.5M/D1.5 *Bridge Welding Code*, "AASHTO/AWS Fracture-Control Plan (FCP) for Nonredundant Members," with the following modifications: 1) All instances of the word "bridge" shall be replaced with "hydraulic structure." 2) The first sentence of the section, Certification and Qualification, shall be omitted.			
6.F.13	**Inspection and Testing** The *fabricator's documented procedure* shall include provisions for inspection and testing of fracture-critical welds.			
6.F.15.2	**Nonconforming Work** The *fabricator's documented procedure* shall include provisions for critical and noncritical *repairs* of fracture-critical welds in accordance with AASHTO/AWS D1.5M/D1.5.			
SPE/QP3	**SUPPLEMENTAL REQUIREMENTS FOR SHOP APPLICATION OF COMPLEX PROTECTIVE COATING SYSTEMS – 420-25**			
1.5.4 CCE	**5.3.2 Buildings, Workspace and Associated Utilities** The Firm shall have a location at which surface preparation, coating, and curing are conducted. The Firm shall also protect stored coating materials, blast-cleaning products, and curing products from deterioration or damage. Regardless of whether the Firm has two distinct areas for cleaning and coating operations or one single area for the entire coating process, the Firm shall be able to demonstrate methods used to control the ambient conditions in these areas and prevent surface contamination during the cleaning, application, and curing processes.			
1.12.5 CCE	**5.3.3 Process Equipment** The Firm shall own or control coating and blast-cleaning equipment suitable for applying complex coating systems. The required equipment shall be present at the facility and must be operable during the onsite audit at the facility that holds the certification. Equipment shall include, but not be limited to: (a) Blast-cleaning equipment, which includes conventional abrasive blast equipment (b) Power tools or hand tools for surface preparation (c) Compressors, line driers, and oil separators (d) Conventional or airless spray equipment (e) Lighting (f) Power agitators (g) Lifting equipment			

Ref#	Criteria	MS Ref	Audit Findings	Results
1.5.7 CCE	**5.4.5 Project List** An up to date project listing that shows a sampling of the most current projects within the last three years shall be documented and maintained. This list shall demonstrate the knowledge level of the Firm by listing the following: ● Project name ● Project size (e.g., tons, square feet, etc.) ● Dates work was performed. ● Surface preparation (e.g., SP-5, SP-6, SP-7, SP-10) ● Coating system information (e.g., three coat epoxy or two coat urethane). Firms seeking initial certification (or re-certification after a lapse in certification) to this Standard shall demonstrate an acceptable level of compliance to the Standard during the audit on existing work in-house, on a test panel similar to that detailed in ASTM D4228, or on a demonstration piece or pieces that appropriately reflect the nature of the proposed work as approved by the qualifying agency.			
1.6 CCE	**7. Coating System Communication** Written documents (e.g., drawings, travelers, or quality plans) shall be used to communicate throughout the organization: ● Surface preparation (including specification of surface finish), ● Coating type ● Dry film thickness requirements ● Step backs ● Masking ● No-coating or reduced-DFT zones.			
1.10.1 CCE	**10.1 Purchasing Data** The Firm shall clearly describe subcontracted work and the purchased products, materials and services ordered in purchasing documents. This shall include, but not limited to: ● The type of service, material, and other unique identification ● The applicable specifications, drawings, process requirements, inspection instructions and any witness points ● Delivery instructions ● Certificate of Compliance/Conformance/Analysis ● Coating manufacturers' product data sheets (for coating products) ● Testing requirements as applicable			
1.10.2 CCE	**10.3 Qualification and Evaluation of Subcontractors** Firms shall qualify and evaluate suppliers using a suitable method defined by the Firm. The method employed should include consideration of the evaluations of: ● Contract documents ● Consistent ease of application (applies to suppliers of coating) ● Curing time ● Delivery ● Product Quality ● Customer or owner preference ● Availability and suitability of the supplier's technical support staff The frequency of periodic evaluation shall be established in the purchasing procedure. Records of the evaluation of suppliers and subcontractors shall be maintained.			

Ref#	Criteria	MS Ref	Audit Findings	Results
1.11 CCE	**11. Material** **11.1 Container** Material identification on the coating container shall be identified as a minimum by color (pigment description and federal standard number, or manufacturer's number), lot/batch number, ID/stock number, and quantity of coating in container, date of manufacture and manufacturer's name and address.			
1.17 CCE	**11.2 Storage** Materials shall be stored in protected areas under conditions (including temperature) per manufacturers' recommendations. Coating with expired shelf life shall be segregated from current material or specifically marked as "expired" by the Firm. Materials with expired shelf life are nonconforming, and treatment is defined in the procedure for control of nonconformities required by this Standard.			
1.10.3 CCE	**11.3 Certificate of Conformance for Coating— Requirements** This quality record shall validate that the specific batches of coating and thinner or reducers satisfy the contract documents and recommendations on the manufacturer's product data sheets. This includes the components provided by the coating manufacturer, such as the vehicle, catalyst/activator, and zinc dust, and those supplied by the shop such as thinner. Certificates of conformance shall address requirements established by the coating manufacturer and applicable contract documents, including composition and testing for the specific coating. At a minimum, the certificate of conformance issued by the manufacturer on the manufacturer's letterhead shall contain: ● The name of the manufacturer ● The product name ● The batch number ● The date of the manufacture ● A statement that the product complies with the specifications contained in the manufacturer's product data sheet based on applicable test methods. The Certificate of Conformance shall be retained by the Firm as part of its quality records.			
1.12 CCE	**12. Process Control** The Firm shall document and follow procedures necessary to produce a consistent acceptable level of quality of the required coating process, including surface preparation, coating application, curing, and equipment maintenance.			
1.12.3 CCE	**12.1 Surface Preparation** Surfaces to be coated shall be prepared and cleaned in accordance with contract documents, coating manufacturer recommendations, and other nationally or internationally recognized standards or guidelines. Procedures shall be effective in controlling open-nozzle abrasive blast-cleaning and other airborne materials to the degree that the quality of other coating application or curing operations is not affected. (Also see Section 5.3.2.)			

Ref#	Criteria	MS Ref	Audit Findings	Results
1.12.4 CCE	**12.2 Coating Mixing and Application** The mixing and application of coating shall be in accordance with contract documents and the coating manufacturer's recommendations. The procedure shall be effective in demonstrating that: (a) Required conditions are maintained during mixing and application (b) Coating areas are free of air-blown dust, blast media, or other debris and contaminants that can be detrimental to the quality of the coating during application (c) Required areas are masked to protect no-coating areas			
1.13.4 CCE	**12.2.1 Application Records** As part of the application process for complex coating systems, the following shall be recorded for each coat at a minimum: (a) Verification of conforming surface condition (b) Verification of required surface and coating temperature (c) Coating product applied (e.g., name, number, color) (d) Shelf life expiration date (e) Coating batch numbers from base and any mixed components (f) Ambient temperature, relative humidity, and dew point at time of application (g) Verification that the coating (prior to application) is free from visually evident defects (h) Verification that the coating was properly proportioned, thoroughly mixed, and properly agitated (if required) prior to application (i) Thinner/reducer added (quantity, type, and batch number) (j) Induction (sweat-in) time period (beginning and ending) where applicable (k) Verification that the coating was mixed and applied within the manufacturer's specified pot life (l) Coating application equipment used, including pressure, coating spray gun type, and tip size, as applicable (m) Period of time elapsed since application of previous coat in multi-coat systems (n) Start time and finish time (o) Dry film thickness (DFT)			
1.12 CCE	**12.2.2 Transfer of Markings** Pertinent piece marks shall be properly transferred, and heat numbers shall be transferred when required by contract documents.			
1.5.4 CCE	**5.3.3 and** **5.3.4 Inspection, Measuring and Test Equipment** The Firm shall control and have located at their facility operable equipment for inspecting, measuring, and testing for surface preparation, coating application, and curing, and for verifying the calibration of measuring equipment in accordance with Section 14. Surface preparation and application measuring, or evaluation equipment shall include equipment in good working order that provides a means to measure: (a) Surface profile (b) Surface cleanliness (conformance to specified surface preparation standards) (c) Surface temperature (d) Ambient conditions (air temperature, relative humidity, dew point) (e) Wind direction/speed (if coating in an area exposed to the wind) (f) Coating temperature (g) Wet film thickness (h) Dry film thickness			

Ref#	Criteria	MS Ref	Audit Findings	Results
1.12.5 CCE	**12.3 Equipment** **12.3.1 Function** All facilities and equipment (e.g., lighting, blasting and spraying equipment, air and particulate handling, etc.) shall be functional and adequate for performance of the work. **12.3.2 Preventive Maintenance** A documented preventive maintenance procedure shall be implemented for major equipment, including, but not limited to: (a) Blast-cleaning equipment, which includes nozzle blast equipment, centrifugal blast equipment, and dust collectors (b) Compressors, line driers, and oil separators (c) Conventional or airless spray equipment (d) Lifting equipment			
1.13 CCE	**13. Inspection and Testing** The Firm shall document a procedure for inspection and testing activities in order to verify that the product quality meets the requirements of the contract documents. The Firm shall establish in the procedure an inspection plan to ensure contract requirements are met. This plan shall be adjusted at any time when the required quality level is not met. The inspection procedure shall include assignments of inspection duties, showing the required inspection and testing, and the required records to meet the contract requirements. The Firm shall conduct 100% inspection for visible coating defects. At a minimum, the Firm shall conduct dry film thickness measurements in accordance with SSPC-PA 2, unless otherwise specified in the contract documents. The sampling plan should identify the unique problem areas created by the part or piece geometry. The Firm shall enforce its procedures for control of nonconformities (see Section 15) when product is found to be nonconforming.			
1.13.1 CCE	**13.1 Assignment of Inspection of Surface Preparation and Application of Coating** Inspectors shall be assigned on the basis of their qualifications to perform inspections of coating systems. Production personnel can be assigned to inspection duties under the following conditions: ● They shall be trained both in knowledge and practice in proper inspection methods and acceptance criteria specified for the material they are inspecting. ● They are aware of their responsibilities and are given time to perform their inspection responsibilities. ● They do not inspect their own work. Production personnel shall be capable of inspecting their own work as an in-process inspection, however, that inspection cannot be accepted as the final inspection for product conformity. This capability can be demonstrated by their knowledge of the acceptance criteria for the part of the process for which they have inspection responsibility. ● Their inspections are monitored by qualified personnel. Production personnel can perform final inspection of the work of others, provided they are properly trained, and their work is monitored by QC (another QC qualified inspector or QC management.)			

Ref#	Criteria	MS Ref	Audit Findings	Results
1.13.4 CCE	**13.2 Inspection Records** Records shall be maintained for complex coating systems showing what parameters were inspected, who performed the inspections, the date of inspections, what pieces were inspected, and disposition of any nonconformances. The Firm shall document every final complex coating inspection that is conducted. Documentation requires retrievable records that are retained for an appropriate period related to contract requirements (see Section 9). The scope of the final coating inspection is per the Firm's plan for meeting the minimum requirements (see Section 13), which may be dictated by contract requirements. Inspection reports and test results shall be consistent with customer and owner requirements. At a minimum, the following inspections shall be recorded: (a) Surface preparation (degree of cleanliness achieved, surface profile achieved, condition of surface immediately prior to beginning coating application) (b) Dry film thickness (DFT), including any specific data required by SSPC-PA 2 or contract documents (c) Visual inspection for visible coating defects (recording by exception only does not meet this requirement) (d) DFT gage accuracy verification record (in accordance with SSPC-PA 2)			
1.14 CCE	**14. Calibration of Inspection, Measuring, and Test Equipment** Verification of accuracy shall be per the manufacturer's recommendation or contract documents. The verification method shall be documented and shall address the acceptance criteria used to verify that gages are reading accurately and what happens when a gage is found not to be reading accurately. The Firm shall describe what measures and evaluations are in question for items that were inspected with the gage determined not to be reading accurately. The only equipment for which verification of accuracy is required for this standard is the gage used to measure dry film thickness (DFT). The gage to measure wet film thickness shall be included if any of the Firm's contracts or product manufacturer's recommendations use this measurement option as the final acceptance of the coated surfaces. The verification of accuracy of the DFT gage shall be determined according to SSPC-PA 2 using a standard (shims or test blocks) that is traceable to a national standard.			
1.15 CCE	**15. Control of Nonconformities** Materials with expired shelf life are nonconforming. Such materials may be "used as is" with authorization from the manufacturer as described in SSPC-PA 1, "Shop, Field, and Maintenance Coating of Metal." The manufacturer's extension of the shelf life is evidenced by a replacement certificate of conformance. Alternatively, materials with expired shelf life may be used as "owner-approved nonconforming product" with documentation of approval from the owner. Records shall be kept of the nonconforming materials and pieces affected, the nature of the nonconformance, the disposition selection, authorization, and inspection results.			

× BU × CPT × SBR × IBR × ABR × FCEB × SPE × HYD × HYDA × FCEH × CSE × MEE × SEE × BEE (check all that apply)

Ref#	Criteria	MS Ref	Audit Findings	Results
1.18 CCE	**18. Training** Personnel involved in coating application and surface preparation shall receive initial and continuing (as defined by the Firm) documented training appropriate for their job functions as well as in inspection methods and quality acceptance criteria. Training shall be conducted by a qualified external source or delivered in-house by a qualified internal person. Qualification of trainers shall be documented. Training shall cover the key issues of the subject and be documented with a record of the topics discussed, the course administrator, trainees in attendance, measurement of trainee comprehension, and the training dates. The course curricula shall relate to the subject and cover the key issues of the subject. **18.1 Qualification and Training of Production Personnel** Production personnel shall demonstrate and be capable of inspecting their own work as an in-process inspection. The Firm shall implement a written program to: (a) Assess the skills and general training needs of newly hired craft workers and qualify them for their assigned tasks (b) Verify the qualifications of existing craft workers (c) Train inexperienced craft workers (trainees) as necessary (d) Evaluate the performance of craft workers at least once per calendar year and provide additional training as necessary (e) Ensure compliance with contract-specific worker training/qualification requirements (f) Train in the use of new equipment and use of materials not previously applied **18.2 Qualification and Training of Inspection Personnel** Personnel involved in inspection of surface preparation and coating application and curing shall be qualified by training and experience as defined by the Firm. Inspectors shall be trained in the inspection tasks they will perform. Training for inspectors shall be provided and documented by either qualified in-house instructors or by qualified external sources. Experience shall include the inspection of complex coating systems applied on a variety of projects. Inspectors shall be familiar and proficient with their responsibilities, the use of inspection equipment, and the inspection procedures. The basis for qualification of inspectors for coating processes shall be documented and shall include experience and training in surface preparation and coating application and in inspection and testing of these processes. The competency of inspectors shall be assessed and then documented. The competency of inspectors without experience or inspectors at new Firms shall be documented. Qualification standards and certifications granted by recognized industry organizations can be used to establish the basis for qualification. ASTM D3276 can be used as a source of body knowledge in developing appropriate inspector training for coating operations performed by the Firm.			

Ref#	Criteria	MS Ref	Audit Findings	Results
	DEFINITIONS			
1.4 CCE	**4.10 Enclosed** A permanent or semi-permanent facility, enclosure or building (four continuous walls to a grade/floor with a roof) where surface preparation and coating activities are conducted in a controlled environment with fixed or portable ventilation systems. The environment is controlled when ambient conditions (temperature, humidity, dew point and the introduction of contaminants) are controlled to meet the manufacturer's requirements. This environment is not subject to outdoor weather conditions and/or blowing dust, or subject to shop related conditions where the surface preparation or coating activities are in jeopardy of contamination. Choosing not to coat on days where the environment is not controlled is not a control option for this category. Surface preparation and/or coating operation occur outside the enclosure only with advanced written authorization from the owner's representative.			
1.4 CCE	**4.5 Covered** A permanent or semi-permanent facility, enclosure or building having a roof above, under which cleaning and coating activities are performed out of direct exposure to outdoor weather with fixed or portable ventilation systems.			
1.4 CCE	**4.13 Exposed (Open)** An area with no roof or walls in which cleaning and coating activities are conducted. The area is exposed to outdoor weather conditions and blowing dust. A method of control for this category may be to suspend coating operations until conditions are acceptable.			