

# CERTIFICATION PROGRAMS

## AISC 207-23 AUDIT GUIDE

### All Erector Programs and Endorsements (CSE, MEE, SEE, BEE)

#### Purpose

This audit guide will help you transition between the *Standard for Certification Programs* (AISC 207-20) and the updated *Standard for Certification Programs* (AISC 207-23). 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 420-10/SSPC-QP 3) the additional criteria are included with reference to the general sections of 207-23.

#### Use Instruction

Explanation of the column layout:

- **Ref#** - identifies the section or subsection of new standard 207-20
- **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 207-23 but are **not** highlighted in **red**:

- The word “clearly” was removed as an adjective throughout the standard since it provides no value to the item's description.
- Use of the word “all” was reviewed to determine appropriateness. Many instances were changed to “the”.
- The glossary contains several revised terms. This should be used as a reference for the internal audit. 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. The Commentary is not included in this guide.

#### Customize to Your System

If you have multiple certifications and/or endorsements, you may want to copy and paste the criteria from the supplemental Chapters of 207-23 provided in this guide into the row of the associated general section. Criteria that do not apply to your certifications can be deleted making a custom internal audit guide for your company.

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Ref#	Criteria	MS Ref	Audit Findings	Results
1.1	<p><b>Purpose</b>                      The purpose of this Standard is to confirm to <i>owners</i>, 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, <i>documented procedures</i>, knowledge, equipment, and commitment to quality to perform <i>fabrication</i>, manufacturing, and/or <i>erection</i> as described in this Standard.</p>			

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Ref#	Criteria	MS Ref	Audit Findings	Results
1.2	<p><b>Scope</b> The requirements in this Standard shall apply as follows:</p> <ul style="list-style-type: none"> <li>a) Chapters 1 and 2 shall apply to building <i>fabricators</i>, who fabricate and supply the <i>structural steel</i> frames for buildings where elements of the frames are as defined in AISC <i>Code of Standard Practice</i> Section 2.1.</li> <li>b) Chapters 1 and 3 shall apply to metal <i>component manufacturers</i>, who <i>manufacture components</i> that include bracing not designed for primary loads (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. <i>Manufacturers</i> 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 be required to meet specific supplemental requirements to this Standard.</li> <li>c) Chapters 1 and 4 shall apply to bridge <i>fabricators</i>, who fabricate and supply steel highway or railroad bridges.</li> <li>d) Chapters 1 and 5 shall apply to <i>erectors of structural steel</i>.</li> <li>e) Chapters 1 and 6 shall apply to hydraulic metal structure <i>fabricators</i>.</li> </ul> <p>In Chapters 2 through 6, only those subsections that are supplementary to Chapter 1 are indicated.</p> <p>The Glossary is an integral part of this Standard. Nonmandatory Commentaries are provided for background, and the user is encouraged to consult them.</p> <p>NOTE: The terms listed in the Glossary are to be used in addition to those in the AISC <i>Code of Standard Practice for Steel Buildings and Bridges</i>, hereafter referred to as the <i>Code of Standard Practice</i>; some commonly used terms are repeated here for convenience and marked with an †. Where used, terms are italicized to alert the user that the term is defined in this Glossary.</p>			

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1.3	<p><b>References</b> 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 following documents shall be demonstrated:</p> <ul style="list-style-type: none"> <li>A. ANSI/AISC 303 Code of Standard Practice for Steel Buildings and Bridges</li> <li>B. RCSC Specification for Structural Joints Using High-Strength Bolts</li> <li>C. Selected ASTM Standards for Structural Steel Fabrication, as published for AISC, or equivalent content</li> <li>D. AWS A2.4 Symbols</li> <li>E. AWS A3.0M/A3.0 Terms and Definitions</li> <li>F. AWS D1.1/D1.1M Structural Welding Code—Steel</li> </ul>			
1.4	<p><b>Definitions</b> As used in this Standard, the words <b>shall</b>, <b>must</b>, or <b>will</b> denote a mandatory requirement. The word <b>should</b> denote a guideline or recommendation. The words <b>may</b> or <b>can</b> denote an opportunity to make a choice.</p>			
1.5	<p><b>MANAGEMENT RESPONSIBILITY</b></p>			
1.5.1	<p><b>Policy for Quality</b> Executive management shall ensure that a policy for quality is communicated, implemented, and maintained. The policy for quality shall include:</p> <ul style="list-style-type: none"> <li>A. A commitment to quality that includes a commitment to meet the requirements in contract documents.</li> <li>B. A quality management system that provides a framework for establishing, communicating, and reviewing <b>the organization's</b> quality goals.</li> </ul> <p>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.</p>			

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1.5.2	<p><b>Quality Management System</b></p> <p>The <i>quality management system</i> shall satisfy the requirements of this Standard and the requirements of the <i>contract documents</i> and referenced standards. The <i>quality management system</i> shall include a <i>quality manual</i>, <i>documented procedures</i>, and records. The <i>quality management system</i> must address both <i>quality control</i> and <i>quality assurance</i> as defined in the Glossary of this Standard. <i>Documented procedures</i> shall contain:</p> <ul style="list-style-type: none"> <li>(a) The purpose of the <i>procedure</i>.</li> <li>(b) Process definition that includes steps required for completion.</li> <li>(c) Assignment of responsibility for performance.</li> <li>(d) Assignment of responsibility for review, revision, and/or approval of the <i>procedure</i>.</li> <li>(e) Identification of records that are generated.</li> <li>(f) For inspection activities, frequency of observations or inspections and how those observations or inspections are documented.</li> </ul>			

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1.5.3	<p><b>Management Review</b>                      Executive management shall conduct periodic 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:</p> <ul style="list-style-type: none"> <li>A. A summary of previous management reviews.</li> <li>B. Results of any internal and external audits conducted since the previous management review.</li> <li>C. Customer feedback and feedback mechanisms, identifying opportunities for improving quality.</li> <li>D. Work nonconformances. Both the number and severity of nonconformances shall be assessed.</li> <li>E. Process nonconformances, including compliance with the documented procedures comprising the quality management system.</li> <li>F. Effectiveness of the corrective actions taken.</li> <li>G. Results of equipment inspections, including the adequacy of equipment resources.</li> <li>H. Adequacy of the training program with respect to the levels of qualification required as appropriate.</li> <li>I. Proposed or required modifications to the quality management system.</li> </ul> <p>The management review record shall include the decisions and actions required for implementation of:</p> <ul style="list-style-type: none"> <li>A. Improvement of the effectiveness of the quality management system and its processes.</li> <li>B. Improvement of quality.</li> <li>C. Resource needs.</li> </ul> <p>Records from management reviews shall be maintained in accordance with the <i>documented procedure</i> as required in Section 1.9.</p>			

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1.5.4	<p><b>Responsible Quality Personnel</b>                      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:</p> <ul style="list-style-type: none"> <li>A. Ensure that documented procedures needed for the quality management systems are established, implemented and maintained in accordance with this Standard.</li> <li>B. Report to executive management on the performance of the quality management system and any need for improvement.</li> <li>C. Communicate with external parties on matters relating to the quality management system.</li> </ul>			
1.5.5	<p><b>Resource Management</b>                      Resources necessary to comply with the <i>contract documents</i> 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 2.5.4, 3.5.4, 4.5.4, 4.1.5.4, and 5.5.4.3, and 6.5.4.2 for non-personnel, industry-specific resource requirements.</p>			

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1.5.6	<p><b>Internal Communication</b>                      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.</p>			
1.5.7	<p><b>Quality Manual</b>                      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:</p> <ul style="list-style-type: none"> <li>A. Documented statements of a quality policy and quality objectives as required by this Standard.</li> <li>B. Documented procedures established for the quality management system (or references to them), along with their associated quality records.</li> <li>C. Documents needed by the organization to ensure the effective planning, operation and control of its processes.</li> <li>D. Organizational chart describing the interrelationship of functional positions that manage, perform and verify work affecting quality.</li> <li>E. Job descriptions outlining responsibilities, authority and required qualifications for key positions.</li> <li>F. Qualification evidence for individuals in key positions /functions.</li> </ul> <p>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.</p>			

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1.6	<p><b>Construction Document Review and Communication</b>  <i>A documented procedure</i> shall be developed for contract and project specification review. The <i>procedure</i> 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 <i>documented procedure</i> as required in Section 1.9.</p>			
1.7	<b>DETAILING</b> - Section 1.7 does not apply to erectors.			
1.8	<b>CONTROL OF MANAGEMENT SYSTEM DOCUMENTS AND PROJECT DOCUMENTS</b>			
1.8.1	<p><b>Management System Documents</b>                      A documented procedure shall be developed to control quality management system documents.</p>			
1.8.1.1	<p><b>Quality Management System Documents</b>                      Documents covered by this Section shall include, but not be limited to, the quality manual, and any documented procedures.</p>			
1.8.1.2	<p><b>Review and Approval</b>                      Documents shall be reviewed and approved by the same function and authority level that authorized the original document.</p> <p>The function and authority levels that have responsibility for review and approval of internal standards and documented procedures shall be designated.</p> <p>The documented procedure shall describe the frequency and requirements for review and updating and establish a method to identify changes.</p>			
1.8.1.3	<p><b>Revision Control</b>                      Revisions to quality management system documents shall be identifiable and there shall be a method for monitoring and identifying the latest revision.</p> <p>Revisions shall be reviewed for adequacy and approved by the same function and authority level that authorized the original document.</p> <p>Quality management system documents shall remain legible and easily identifiable.</p>			
1.8.1.4	<p><b>Access</b>                      Documents shall be available and readily accessible to the personnel responsible for performing functions affecting the quality of the completed work.</p>			
1.8.1.5	<p><b>Communication</b>                      Changes and revisions shall be communicated to the personnel responsible for performing functions affecting the quality of the completed work.</p>			
1.8.2	<p><b>Project Documents</b>                      A documented procedure shall be developed to control project documents. Documents covered by this Section shall include, but not be limited to, contract documents, revised contract documents, shop drawings, erection drawings, RFIs, and any quality assurance documents received.</p>			

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1.8.2.1	<p><b>Tracking</b> 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.</p> <p>The documented procedure shall require records (e.g., 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.</p>			
1.8.2.2	<p><b>Revision Control</b> 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.</p> <p>The documented procedure shall include provisions to prevent inadvertent use of obsolete documents.</p> <p>Project documents shall remain legible and easily identifiable.</p>			
1.8.2.3	<p><b>Access Project</b> Documents shall be available and readily accessible to the personnel responsible for performing functions affecting the quality of the completed work.</p>			
1.8.2.4	<p><b>Communication</b> Changes and revisions shall be communicated to the personnel responsible for performing functions affecting the quality of the completed work.</p>			
1.9	<p><b>MAINTENANCE OF QUALITY RECORDS</b> A documented procedure shall be developed for the maintenance of quality records that provide for record identification, collection, storage and retrieval, retention, and disposition.</p>			
1.9.1	<p><b>Retention</b> 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.</p>			
1.9.2	<p><b>Storage</b> Quality records shall be stored in a manner that minimizes damage, deterioration or loss.</p>			
1.9.3	<p><b>Retrieval</b> Quality records shall be accessible in a reasonable time frame.</p>			
1.10	<p><b>PURCHASING</b> A documented procedure shall be developed to ensure that subcontractors and suppliers provide contracted services and materials conforming to project requirements.</p>			

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1.10.1	<p><b>Purchasing Data</b>  <i>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.</i> This information shall include, but shall not be limited to:</p> <ul style="list-style-type: none"> <li>A. The type of service, material, class, grade, and other unique identification.</li> <li>B. The applicable specifications, drawings, process requirements, and inspection instructions and any witness points.</li> <li>C. Delivery instructions and date.</li> <li>D. Required quality reports, certified test reports, and certificates of compliance/conformance of purchased materials.</li> </ul>			
1.10.2	<p><b>Selection of Subcontractors and Suppliers</b>                      A documented procedure shall be developed that describes how the certified company conducts initial and ongoing evaluation of it's subcontractors and suppliers.</p> <p><i>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.</i></p> <p><i>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.</i></p> <p>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 approved construction documents and referenced standards.</p> <p>Management shall determine:</p> <ul style="list-style-type: none"> <li>A. Evaluation criteria.</li> <li>B. Reevaluation interval.</li> <li>C. Personnel involved in the evaluation process.</li> </ul> <p>Subcontractors and suppliers shall be evaluated via an audit or documented acceptable past performance. As a minimum, their quality and timely, proper delivery shall be part of the evaluation.</p>			
1.10.3	<p><b>Verification of Purchased Product, Materials and Services</b>                      The documented procedure for verification shall identify the activities necessary for ensuring that purchased products, materials and services meet project requirements.</p>			
1.10.4	<p><b>Control of Customer-Furnished Work and Material</b>                      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.</p>			

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1.10.5	<p><b>Purchasing Records</b> 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.</p>			
1.11	<p><b>MATERIAL IDENTIFICATION</b> A documented procedure shall be developed for the identification. Records that provide a basis for material identification shall be maintained as required by Section 1.9.</p> <p>Structural steel material shall be identified as stated in the Code of Standard Practice, unless otherwise noted in the contract documents.</p> <p>Welding consumables shall be identified in accordance with the appropriate AWS specification and classification.</p> <p>Coating materials (excluding metallic coating) shall be identified on the container by, at a minimum, color (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.</p> <p>Metallic coatings shall be identified by composition and the appropriate ASTM specification, including thermal spray coating.</p> <p>Fasteners shall be stored in containers identified by type, grade, size and lot number(s).</p> <p>Material traceability to corresponding MTRs 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.</p>			
1.12	<p><b>PROCESS CONTROLS</b> Documented procedures shall be developed for the processes necessary to produce a consistent, acceptable level of quality of the completed work in accordance with applicable codes and project requirements.</p> <p>Regardless if these processes are routinely performed, effective implementation of the following documented procedures is required as a minimum.</p>			

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1.12.1	<p><b>Welding</b>                      The documented procedure for welding shall be developed that addresses the management of:</p> <ul style="list-style-type: none"> <li>A. WPSs.</li> <li>B. Preheat requirements.</li> <li>C. PQRs.</li> <li>D. Storage (including ovens) and identification requirements for welding consumables.</li> <li>E. Welder, welding operator, and tack welder qualifications and qualification test records in accordance with appropriate AWS requirements.</li> <li>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.</li> <li>G. <span style="color: red;">Traceability of welds to the welders who produce them.</span></li> </ul> <p>WPSs shall be in close proximity to and used by the welders, welding operators or tack welders.</p>			
1.12.2	<p><b>Bolt Installation</b>                      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 approved construction documents and referenced standards. The documented bolting procedure shall include storage, pre-installation verification, installation, and inspection of fastener assemblies for snug-tightened, pretensioned and slip-critical joint types.</p>			
1.12.3	<p><b>Material Preparation for Application of Coatings</b>                      The documented procedure for surface preparation shall support achievement of cleanliness and surface profile required by coating manufacturer recommendations, product data sheets, and contract documents.</p>			
1.12.4	<p><b>Coating Application</b>                      The documented procedure shall support application and curing of coatings in accordance with manufacturer recommendations and product data sheets and with contract documents.</p>			
1.12.5	<p><b>Equipment Maintenance</b>                      The documented procedure for equipment maintenance shall, at a minimum, define the evaluation of and preventive maintenance for equipment <span style="color: red;">necessary to meet work quality and delivery requirements.</span></p>			

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1.13	<p><b>INSPECTION AND TESTING</b> A documented procedure for inspection and testing shall be developed to ensure that the completed work meets the requirements of the contract documents.</p> <p>The <i>procedure</i> 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 <i>nonconformance procedure</i> requirements in Section 1.1.5.</p> <p>When inspecting less than 100% of the work, the <i>procedure</i> 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.</p>			
1.13.1	<p><b>Assignment of QC Inspections and Monitoring</b> Qualification requirements for QC inspectors shall be defined and documented as required in Section 1.5.4. Production personnel may be assigned to QC inspection duties under the following conditions:</p> <ul style="list-style-type: none"> <li>A. They are knowledgeable in proper inspection methods and acceptance criteria specified for the material or work they are inspecting and hold the required certification as applicable.</li> <li>B. They are aware of their responsibilities and are given time to perform them.</li> <li>C. They inspect other's work.</li> <li>D. Their inspections are monitored by qualified quality control personnel.</li> </ul>			
1.13.2	<p><b>Receipt Inspection</b> Materials received shall be compared to the purchase order requirements and the receiving documents.</p> <p style="color: red;">The receiver shall identify the material and quantity and check for visible shipping damages.</p>			
1.13.3	<p><b>In-Process Inspection</b> 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.</p> <p>Compliance with documented process control procedures shall be monitored.</p>			
1.13.3	<p><b>Final Inspection</b> 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.</p>			

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1.13.4	<p><b>Inspection Records</b></p> <p>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.</p> <p>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.</p>			
1.14	<p><b>CALIBRATION OF INSPECTION, MEASURING AND TEST EQUIPMENT</b></p> <p>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 (may be welding machine volt and amp meters or auxiliary volt/amp meters) shall be calibrated at a minimum every 12 months, unless a more frequent interval is required. The procedure shall include provisions for:</p> <ul style="list-style-type: none"> <li>A. A unique identifier for each piece of equipment.</li> <li>B. A list of equipment that requires calibration.</li> <li>C. Service use for each piece of equipment, including the required precision for the types of inspections, measurements or tests made.</li> <li>D. Calibration or adjustment instructions in accordance with the manufacturer's recommendations.</li> <li>E. Frequency of calibration or adjustment.</li> <li>F. Tracking calibrations, adjustments and repairs.</li> <li>G. Storage and handling of inspection, measuring, and test equipment to maintain accuracy and fitness for use.</li> <li>H. Identification of standards or certified equipment having a known valid relationship to internationally or nationally recognized standards used to calibrate each listed piece of equipment. Where such standards do not exist, the basis used for calibration shall be documented.</li> <li>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 to work that was measured using it.</li> <li>J. Method of preventing inadvertent use of uncalibrated equipment where calibration is required.</li> </ul> <p>Calibration and adjustment history shall be available.</p> <p>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 removing the equipment from service until it can be recalibrated, adjusted, or repaired.</p> <p>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.</p> <p style="color: red;">Records of calibration shall be maintained as required by Section 1.9.</p>			

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Ref#	Criteria	MS Ref	Audit Findings	Results
1.15	<p><b>CONTROL OF NONCONFORMANCES</b> A documented procedure shall be developed to identify and control nonconformances. Records of nonconformances shall be maintained as required by Section 1.9.</p>			
1.15.1	<p><b>Nonconformance with Management Systems</b> 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 quality assurance inspections.</p>			
1.15.2	<p><b>Nonconforming Work</b> The procedure for nonconforming work shall provide for identification, documentation, evaluation, treatment of nonconforming work, and notification of the relevant functions concerned. Nonconforming work may also be identified in a quality assurance inspection report. These reports, when received, become quality assurance inspection records.</p> <p>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:</p> <ul style="list-style-type: none"> <li>A. Redesign and rework, as approved by the responsible party, and as required in the contract documents.</li> <li>B. Repair, as approved by the responsible party, and as required in the contract documents.</li> <li>C. Use as-is, as approved by the responsible party, and as required in the contract documents.</li> <li>D. Scrap.</li> </ul> <p>If the treatment is rework or repair, the result will be inspected per project requirements, as well as per the quality control process.</p>			

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1.16	<p><b>CORRECTIVE ACTION</b></p> <p>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 <b>documented</b> procedure shall address these steps:</p> <ul style="list-style-type: none"> <li>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.</li> <li>B. Assign responsibility and establish a time frame for the response to a CAR.</li> <li>C. Investigate and document the scope of the nonconformance, root causes, corrective measures taken, and list the actions to be taken to prevent recurrence.</li> <li>D. Communicate the corrective action request and resolution to executive management and appropriate members of the organization.</li> <li>E. Follow up the corrective action taken with periodic monitoring to assure the corrective action is implemented and is effective.</li> </ul> <p>Corrective action shall be applied when:</p> <ul style="list-style-type: none"> <li>A. There is a nonconformance that is repetitive in nature as identified by periodically reviewing nonconformance reports or summaries for negative trends.</li> <li>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.</li> <li>C. Nonconformance with the quality management system is found during the day-to-day execution of the system.</li> <li>D. Nonconformance is unacceptable as determined by management.</li> <li>E. A customer complaint has been investigated and corrective action has been determined necessary.</li> </ul> <p><b>Records of corrective actions shall be maintained as required by Section 1.9</b></p>			
1.17	<p><b>HANDLING, STORAGE AND DELIVERY OF MATERIALS, FABRICATED WORK, AND COMPONENTS</b></p> <p>Materials, fabricated work, and components shall be stored, and shipped to avoid damage and deterioration as required by the Code of Standard Practice. Materials, fabricated work, and components shall be protected to prevent use in other than its intended purpose. Any such material that is lost, damaged, or otherwise unsuitable for use shall be recorded and reported as appropriate.</p>			

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1.18	<p><b>TRAINING</b>                      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.</p> <p style="color: red;">Evaluation of trainee comprehension of course material and <i>documentation of successful completion is required.</i></p> <p style="color: red;">Training records shall be maintained as required by Section 1.9.</p>			
1.19	<p><b>INTERNAL AUDIT</b>                      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. Different parts of the management systems may be audited at different times and different frequencies, provided all sections of the management systems are audited annually.</p> <p>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.</p> <p style="color: red;">Records of Internal audits shall be maintained as required by Section 1.9.</p>			
	<p><b>CHAPTER 5                      ERECTOR REQUIREMENTS</b></p>			
5.3	<p><b>References</b> The ability to work to and meet the requirements of the latest edition of the following documents shall be demonstrated:</p> <ul style="list-style-type: none"> <li>(a) ANSI/AISC 360 Specification for Structural Steel Buildings.</li> <li>(b) ASTM F3125/F3125M Standard Specification for High Strength Structural Bolts, Steel and Alloy Steel, Heat Treated, 120 ksi (830 MPa) and 150 ksi (1040 MPa) Minimum Tensile Strength.</li> </ul>			
5.5.4.3	<p><b>Erection Tools and Equipment</b>                      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.</p>			
5.12.3	<p><b>Material Preparation for Application of Coatings</b>                      The following requirements apply for <i>erectors</i> in lieu of the requirements provided in Section 1.12.3. When the <i>erector's</i> work includes <i>coating</i> application or touch-up of <i>coatings</i>, the <i>documented procedure</i> for material preparation shall support achievement of cleanliness and the surface profile required by <i>coating manufacturer</i> recommendations, product data sheets, and <i>contract documents</i>, as applicable.</p>			

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Ref#	Criteria	MS Ref	Audit Findings	Results
5.12.4	<p><b>Coating Application</b>                      The following requirements apply for <i>erectors</i> in lieu of the requirements provided in Section 1.12.4. When the <i>erector's</i> work includes <i>coating</i> application or touchup of <i>coatings</i>, the <i>documented procedure</i> for <i>coating</i> application shall support achievement of proper application and curing of <i>coatings</i> in accordance with <i>manufacturer</i> recommendations, product data sheets, and <i>contract documents</i>, as applicable.</p>			

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Ref#	Criteria	MS Ref	Audit Findings	Results
5.12.6	<p><b>Erection Plan</b></p> <p>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:</p> <ul style="list-style-type: none"> <li>A. Project name and location.</li> <li>B. Indication of access for material delivery and equipment delivery, including lay-down, shake-out, and field- assembly areas.</li> <li>C. Sequence of erection.</li> <li>D. Dimensions and locations of cranes or other lifting equipment.</li> <li>E. Required site conditions for the crane location and confirmation of adequate base support for the crane.</li> <li>F. Sizes, model names or numbers, and capacity charts for lifting equipment.</li> <li>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.</li> <li>H. Indicate critical lifts, if any, and include the critical lift protocol or procedure.</li> <li>I. Requirements for multi-lift rigging.</li> <li>J. Types of slings to be used and, if more than one type, the locations in which they will be used.</li> <li>K. Rigging information for atypical lifts (weight, geometry, center of gravity, etc.) such as slings and hardware, rated lifting beams, beam clamps (including catalog cuts), as applicable to the lift.</li> <li>L. Designation of crane paths from position to position, indicating load travel paths, swing restrictions, and personnel exclusion zones.</li> <li>M. Designation of space required for field assembly prior to erection.</li> <li>N. Identification of special fastening sequences and/or methods.</li> <li>O. Identification of special or atypical connections.</li> <li>P. Traffic control notes.</li> <li>Q. Identification of specification requirements for erection , such as plumbing tolerances smaller than those stipulated in the Code of Standard Practice.</li> <li>R. The stability of the structure and individual members during erection shall be checked in accordance with Section 7.10.3 of the Code of Standard Practice .</li> <li>S. Falsework requirements and corresponding design calculations.</li> <li>T. Jacking layout and jacking procedure.</li> <li>U. Notation of special problems due to overhead restrictions, underground utilities, barriers to crane tail swing, etc.</li> </ul> <p>The erection plan shall be reviewed before the start of erection by the erector's project management team and be available to all 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.</p> <p>In accordance with the Code of Standard Practice and contract documents, the erector shall have documentation or other evidence that the required information in Section 7.10 of the Code of Standard Practice has been provided.</p>			
<b>SEISMIC ERECTION ENDORSEMENT</b>				

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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 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 Structural Welding Code—Seismic Supplement			
<b>METAL DECK INSTALLATION ENDORSEMENT</b>				
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 ANSI/SDI QA/QC Standard for Quality Control and Quality Assurance for Installation of Steel Deck. Instructions for metal deck installation shall be provided in the erection plan. (a) AWS D1.3 Structural Welding Code—Sheet Steel			
<b>BRIDGE ERECTION ENDORSEMENT</b>				
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 D1.5 Structural Welding Code—Bridge Welding Code			