



ACCREDITED INSPECTION AGENCIES: GUIDELINES FOR CONDUCTING BIENNIAL INSPECTIONS OF MANUFACTURERS ACCREDITED TO THE IAS ACCREDITATION CRITERIA FOR INSPECTION PROGRAMS FOR METAL BUILDING SYSTEMS

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Purpose

This guide is to assist inspection agencies in the planning and performing of biennial inspections that meet the requirements of IAS Accreditation Criteria for Inspection Programs for Metal Building Systems (AC472).

AC472 Section 4.3 requires the metal building manufacturers to obtain the services of an IAS-accredited inspection agency which is accredited for the specified discipline, to conduct biennial unannounced inspections, of the manufacturers. The inspections shall be every six months with variances permitted within plus or minus 30 days from the previous inspection.

Introduction

Rather than check every aspect of the metal building manufacturer quality system during each biennial assessment, this guideline focuses on key quality indicators, those elements that are critically important in meeting the requirements of AC472. Typically, between six and fifteen inspection objectives are provided for review during each biennial assessment. The review should include both a broad review of whether the metal building manufacturer has procedures in place and meets the basic requirements, and a closer, detailed review of records to verify that the requirements have been implemented in the actual design, production and daily quality assurance activities.

By probing different elements, different procedures and different processes during each inspection, IAS-accredited inspection agencies will have eventually covered most of the metal building manufacturer's quality system. It is not necessary to cover **all** the elements of AC472 in the fabricator's facility and in the summary narrative for each inspection. You are expected to evaluate the metal building manufacturer's quality system, but also to do it in an efficient and focused manner; you should limit the depth of coverage when necessary to meet a suggested time frame.

There are a variety of ways to perform an inspection:

- Inspecting is largely about understanding requirements
- Inspections should add value to the manufacturer's operations and will include recommendations, opportunities for improvement and identify best practices. Inspections should identify the manufacturer's strengths, weaknesses and opportunities for improvement as well as ensuring compliance to AC472.

Section 1: Arrival – Opening Meeting

When arriving at the metal building manufacturer's facility for the unannounced inspection, the inspector should identify himself/herself to the manufacturer's management and ask for a copy of the metal building manufacturer's quality policy and quality system procedures (including management review procedures), quality manual, quality plan and/or equivalent documents for review prior to the inspection. The inspector should tell the manufacturer that the review of these procedural documents will facilitate the inspection. If any revisions or changes to management personnel are found, they must be noted in the inspection report. As a minimum, the following documents should be considered upon arrival at the facility and in the inspection agency's report:

- Quality manual, procedure manual and/or written work instructions, (latest revisions).
- Organizational chart
- Location of the facility
- Contact information changes
- Internal audits
- Management reviews
- A project currently under production
- A project in process and nearly completed will provide objective evidence that the procedures set forth in the quality manual have been effectively implemented
- A project proposal will help identify what is considered prior to the project's being released to the shop. This may also be called a quality plan, and illustrates the ability of the manufacturer to capture the quality requirements of a project and disseminate the requirements to the individuals who need to know

Section 2: Biannual Inspection Reports

All reports must include the following:

- The name of the fabrication facility, including the metal building manufacturer's (MB) number assigned by IAS, the physical street address, name and title of the person serving as the fabricator's contacts (including the telephone number, fax number and e-mail address).
- The report must include the IAS listing (AA) number of the inspection agency, the date of the inspection and the signature of the inspector who performed the inspection.

- The inspection report must be reviewed by the IAS-accredited inspection agency program contact and must include the date of review. The report must be signed by personnel who reviewed it.
- An organizational chart of the manufacturer, including the name of the responsible quality manager. This chart must show the relationships among the CEO, project manager, quality manager, in-house quality control inspector, deputy in-house inspector, production manager and production personnel, including the welders. The organizational “chart” may be more than one document.
- Indicate if any changes have been made to the procedures and personnel at the facility since the last inspection, and describe how these changes may affect the operations at the facility.

Section 3: Performing the Biannual Inspection

Review of contract documents. The contract review procedure must include provisions that assure the review is appropriate, that the product and service will meet the specifications. The procedure must also include a provision for the approval of exceptions or change requests. Reviews shall be performed by personnel who have access to the appropriate information and who have adequate knowledge of the requirements. The reviews must be approved by the quality manager.

- Select one project and follow it through the contract review procedure, the quality plan, (including detail drawings), the welder selection (including qualifications of welders), the selected welding procedure specifications (WPS), inspections, and the shipping documents. Include the name of structural engineer of record who is the licensed professional responsible for sealing the contract documents, and also the name of the project; also include the design or architectural team.
- The metal building manufacturer’s annual management review must include a summary. Submit a summary of the annual management review that pertains to quality improvements documented within the past twelve months.
- Internal audits: The manufacturer shall identify the frequency, method of documentation and the content of internal audits to determine the effectiveness of the quality system. Audits shall include a summary that compares the most recent audit to the previous audit, and include the principal elements of AC472 as a minimum. Include a summary for the most recent internal audit performed at the facility within the past twelve months.
- Control of nonconforming work: The manufacturer shall have documented methods for identifying, documenting and assigning the disposition of nonconforming items. Include the nonconformance log and include a summary that describes how nonconforming work leads to remedial measures.
- Corrective action: The manufacturer will have documented methods for investigating, documenting and correcting nonconformances. The procedure must include a provision to preclude repetition. Include a summary of corrective actions implemented that

provide for the improvement of operational efficiency or quality. The nonconformance log or customer feedback log will be reflected through the corrective action. Keep in mind that a corrective action is not the same as a repair.

- Training of all personnel who have an effect on the quality of the finished product shall be documented. Review training records and, as a minimum, submit or note the training records of detailers, project managers, inspectors and welding personnel. Part C will require training records of engineers and perhaps detailers. List what seminars the engineers have attended during the past twelve months.

Note: Training records for welders may be in the form of approved welder qualifications. Training records for inspectors may be in the form of CWI, ICC or CWB qualifications. Training of detailers may include a summary of their training, how their progress is monitored and who takes responsibility for the training of personnel. Certificates from the National Institute of Structural Detailers for Senior Detailer (Class I) and Detailer (Class II) provide evidence; however, the procedure must include how they are monitored by the metal building manufacturer. Training of project managers may include a summary of their training, how their progress is monitored and who takes responsibility for the training of personnel.

- Ensuring traceability of calibration of measurement tools or equipment to nationally recognized standards.

Note: It is recognized there may not be nationally recognized standards available for unique testing equipment. When such instances exist, calibration procedures must be in compliance with manufacturer's recommendations to the extent that such testing equipment is calibrated to ensure consistency with the required measuring capabilities. It is the metal building manufacturer's responsibility to ensure that such testing equipment is approved prior to use.

- Product traceability: The traceability procedure must describe the method used to ensure that manufactured items are traceable as specified in the contract documents. Items that typically require traceability are materials and consumables that are incorporated into the final product. The project documents will determine if full materials traceability is required. However, the fabricator must have a procedure to meet the project needs for the type of fabrication performed. In addition to project requirement needs, the fabricator, as a minimum, must have traceability of the finished product to:

- i. Incoming materials
- ii. Responsible welders
- iii. Plans and specifications

- Submit copies of mill test reports for at least three heats that pertain to the project currently being performed at the facility. Include the identification number of the welder who performed the welding, and the drawing number and latest revision of the drawing. Check with the detailing department and determine if they have a documented system to ensure plant personnel have access to the latest revision of the detail drawing.
- Review receiving inspection of incoming materials for compliance with required specifications, including a review of mill test reports and certificates of conformance to ensure compliance with contract documents. The receiving inspection shall include the review of purchase orders to ensure the item delivered is as stated. Other receiving inspections, such as with consumables, will include similar information, including how the items are to be stored. The storage of consumables shall be in accordance with the

manufacturer's recommendations for storage. Such information shall be referenced in the receiving inspection procedure. Examples of such consumables include but are not limited to the following:

- Coatings (typically primer): What is the batch life? What are the ambient conditions that the storage of the coating is limited to?
- Bolts: How are bolts packaged and under what conditions must they be stored?
- In-process inspection for workmanship that can affect subsequent operations. (Examples of in-process inspections are nondestructive testing of welds that will be hidden or out of reach during the final inspection; visual examination of fit-up tolerances that will not be visible after welding; areas requiring coatings that will not be accessible during final inspection; monitoring of welding and bolting operations, as appropriate.)
- Are the inspections documented?
- How do production personnel know if the item is accepted to this point?
- How is this information communicated?
- Is the communication effective?
- Final inspection includes documented acceptance of all workmanship performed, including materials, welding, bolting, fitting operations and coatings. All final welds are to be accepted under the direction of the in-house CWI, CWB or ICC special inspector. Include the name and certification number of the CWI, CWB or ICC acting as the in-house quality control inspector.
- The effectiveness of the final inspection will be revealed in back charges sustained. Again, in most cases, this will be reflected in the management review summary.
- A list of test and measuring equipment with records to demonstrate that the equipment has been calibrated and is traceable to national standards.
- The maintenance schedule and calibration procedures for testing equipment.
- A list of qualified welding personnel, including their approved welding process, limitations on their qualifications and their identification marks, including the welding procedure specification used for the qualification of such personnel. Who has certified these individuals, who at the facility takes responsibility for the acceptance of the certifying entity decision and who has administered the exams?

Summary

- Conduct an opening meeting that identifies the inspection's objectives and scope. This meeting can be short and held anywhere.

- After the opening meeting, ask for a tour of the facility. The tour should be to familiarize yourself with the manufacturer's operations and work flow.
- After the tour, have an audit plan that is agreed upon based on time availability of personnel with whom you will need to talk.
- Ask questions: Who, what, when, where and why. Carefully observe processes and outputs. It is important to ask open-ended questions, since the answers will abound in information about process performance and personnel competence. An open-ended question is one that requires more than a **yes** or **no** answer.
- Gather information, analyze what is seen and heard, form opinions, and reach conclusions. Inspectors must be prepared, fair, objective, impartial and unbiased.
- Probe to understand that processes are in conformance with the AC472 requirements. Gather objective evidence of which requirements are or are not being met. For example, a welding procedure specification must not only meet the requirements of AWS, but there must be a method of communicating the requirements to personnel who do the welding.
- Take notes frequently. It is difficult to remember actual events that have occurred hours before.
- Conduct a closing meeting with the person in charge of the area inspected. At this closing meeting, inspectors should share their overall opinion on what they have observed, outlining the negative and positive observations. Explain the process for corrective action as regards any significant adverse findings.