



# **AISC Advanced Erector Certification Program Guidelines**

## **ACKNOWLEDGMENT**

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## **INTRODUCTION, PROGRAM GOALS, AND DISCLAIMER**

The Erector Certification Program has been established to enhance the quality and safety of structural steel erection in the United States. The basic elements of the program were developed through the cooperative efforts of a cross-section of non-profit trade associations that are familiar with the steel erection process. The program certifies steel erection contractors in two categories - Certified Steel Erector and Advanced Certified Steel Erector - based on the applicant's demonstrated experience, capability and implementation of sound erection practices. The program does not certify job specific compliance with individual practices, standards, or specifications. The developers, sponsor, administrator, and auditors of the program make no representation that a certified erector will meet particular safety performance, or other standards on any individual job site, and fully disclaim any responsibility for the actions or performance of certified erectors.

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## **1. PROGRAM CRITERIA**

### **1.1 SCOPE**

Contractors erecting structural steel (as defined by the Code of Standard Practice) for buildings and bridges in the United States are certified for performance of appropriate categories of work. Eligibility for certification is determined by adherence of the applicant to an internal system, which demonstrates the applicant's commitment to quality and safety of contract performance, implementation of sound ongoing procedures and programs, and capability to erect steel structures of varying complexity. The program is open to all erectors who seek certification in the categories identified. The program is administered by the American Institute of Steel Construction (AISC), Chicago, Illinois.

### **1.2 APPLICANT'S QUALITY SYSTEM and SAFETY PROGRAM**

The Quality System and Safety Program as implemented by a certified erector must be living documents that address the criteria of the level of certification being sought and is flexible enough to respond to the needs of the company's actual, ongoing project work.

### **1.3 CERTIFICATION LEVELS**

The program shall consist of two levels of certification:

#### **1.3.1 Certified Steel Erector:**

Erection contractors providing services necessary for erection of structures, including, but not necessarily limited to, schools, shopping centers, light manufacturing plants, warehouses, low rise beam and column structures, light truss structures, simple non-continuous bridges, and steel frame buildings which can be erected from the ground with a crawler or rubber tired equipment. Management shall have expressed its commitment to meet or exceed contract requirements and the goal of zero accidents and injuries. By establishing this goal, the contractor demonstrates a commitment to minimize the risk of accidents. The organization shall have access to sufficient resources to comply with the requirements defined in the Certified Steel Erector checklist.

#### **1.3.2 Advanced Certified Steel Erector:**

Erection contractors providing services necessary for erection of structures, including, but not necessarily limited to, large public and institutional buildings, heavy manufacturing plants, bunkers and bins, major bridges, continuous girder bridges, railroad bridges, power houses, major industrial facilities, locks and dams, high rise structures and repair and rehabilitation of existing steel structures. Management shall have expressed its commitment to quality and safety and to meet or exceed contract requirements and the goal of zero accidents and injuries. The organization shall understand the procedures involved and have ready access to the requisite talent, resources and experience necessary to erect complex steel structures. Required techniques and requirements include, but are not necessarily limited to:

- Construction from water
- Staged construction for maintaining traffic
- Coordination with railroads
- Composite construction

- Concrete-core construction
- Close tolerance erection (as in architecturally exposed structural steel)
- Use of gantry and other specialized crane systems
- Implementation of the quality and safety systems defined in the Advanced Certified Steel Erector checklist

## **2. REFERENCES**

### LATEST EDITIONS OF:

AISC Code of Standard Practice for Steel Buildings and Bridges  
RCSC Specification for Structural Joints Using ASTM A325 or A490 Bolts  
ANSI/AWS DI.1 Structural Welding Code - Steel  
ANSI/AASHTO/AWS DI.5 Bridge Welding Code  
ANSI A 10.13 Safety Requirements for Steel Erection  
ANSI A 10.38 Construction and Demolition Safety and Health  
OSHA 29 CFR 1926  
AREMA

## **3. DEFINITIONS**

### **3.1 Self Audit**

The applicant's exercise of evaluation of their system using the application checklist provided with the application. The assessment includes the applicant's disposition as acceptable or unacceptable for each checklist item.

### **3.2 Job Descriptions**

A written document that defines the scope of work and responsibility for each position identified, indicating the position's supervisor and subordinates. Work functions must relate to the requirements of the applicant's quality and safety system. The document must define education, experience and training required for the position.

### **3.3 Key Personnel**

Employees who have positions of authority and responsibility to formulate or administer quality and safety systems.

### **3.4 Superintendent**

The employee at the job site with the responsibility and authority to construct the project in accordance with contract requirements and the company's Project Plans.

### **3.5 Affected Work and Personnel**

Contract work and related personnel under the direct control of the applicant company.

### **3.6 Objective Evidence**

Documentation or physical indication of an element of a quality system. Observations of practices or the condition or markings on erected steel can be used as objective evidence where appropriate. Where checklists demand written procedures, documents shall be available and distributed to those affected.

### **3.7 Quality**

Any aspect of performance that affects the condition of the completed structure, as erected, or the customer's legitimate contract expectations.

#### **3.7.1 Quality Assurance (QA) Functions**

Those activities, which establish and modify, as necessary, the Quality System for either an organization or individual construction projects. Such functions include, but are not limited to, establishment of inspection and acceptance criteria, quality system procedures, evaluation of the effectiveness of the Quality system, and monitoring the inspection and quality control process itself.

#### **3.7.2 Quality Control (QC) Functions**

Those activities designed to assist management in proper implementation of the Quality Plan for a particular construction project. These functions may include inspection, outside inspectors, or monitoring by lead people, supervisors and other key personnel.

### **3.8 Project Specific Erection Plan (PSEP)**

The documentation of major resources and activities anticipated in performance of the work. The PSEP reflects conditions and requirements of the specific project. Those conditions and requirements include physical site conditions, the field requirements shown in erection instructions, contract specifications and applicable provisions of the *AISC Code of Standard Practice* and all documents incorporated by reference into the contract.

### **3.9 Project Specific Safety Plan (PSSP)**

The identification, documentation and analysis of specific hazards that relate to a project. The Project Specific Safety Plan includes the provisions to eliminate or mitigate those hazards, and assigns responsibility for implementation.

### **3.10 Safety**

Any condition or aspect of contract performance which reduces the exposure of affected personnel in proximity to the contract work.

### **3.11 Safety Policy**

A planned manner of performing work intended to lead to a specified record of safety performance.

### **3.12 Operations**

The division of the erection company which supervises work performed at actual construction sites.

### **3.13 Organizational Change**

Transfer of a controlling ownership interest in a company, or changes which require significant amendment to the information required in the application process.

## **4. EXPERIENCE**

Applicants seeking certification shall have experience in work similar to the type of work included in the level for which certification is being sought or shall have a written program to train workers in the significant aspects of that level of work.

## **5. MINIMUM SAFETY SYSTEM REQUIREMENTS**

### **5.1 Safety Organization**

The safety organization shall include at least one manager and at least one site representative. The safety personnel may be assigned other responsibilities if these responsibilities will not interfere with their safety responsibilities. A site representative is not required full time on each site other than where administration of the Project Specific Safety Plan requires a full-time site safety representative. Safety functions include, but are not limited to, the following:

- Safety orientation and training
- Safety record keeping (OSHA Log)
- Safety inspection
- Accident investigation
- Inspection of safety equipment
- Development of site safety plans
- Monitoring compliance with OSHA, project safety requirements, and the applicant's substance abuse policy, if applicable.

### **5.2 Management Responsibility**

#### **5.2.1 Written Safety Program**

The applicant's safety program shall be developed in writing and disseminated to all company personnel. The safety program shall address Federal OSHA requirements, as well as the requirements set forth in Section 5.1, above. The written program will include maintenance of the safety records required by the Occupational Safety and Health Administration of the U.S. Department of Labor (OSHA), and any comparable state agencies, where applicable and records of inspections and actions taken under the requirements of Section 5.1.

#### **5.2.2 Safety Policy**

Management shall define a written policy and objectives related to safety. The written policy and objectives shall be distributed or posted. The policy and objectives shall be understood at all levels of the organization.

### **5.2.3 Commitment**

The policy shall be available and used as the source of direction and authority for the development and implementation of the elements of the Safety Program. This policy should emphasize the applicant's commitment to safety.

### **5.3 Library References**

The following references are to be available as shown (If applicable)

OSHA CFR 1926

ANSI 10.13 Steel Erection

ANSI 10.38 Safety Program

ANSI 10.42 Qualified Rigger

ANSI/ASME B30

## **6. MINIMUM QUALITY SYSTEM REQUIREMENTS**

A Quality System shall be established and maintained as a means of monitoring conformance of erection services to accepted industry practice and specified project requirements.

### **6.1 Management Responsibility**

#### **6.1.1 Management Quality Policy**

Management shall define a written policy and objectives related to quality. The written policy and objectives shall be distributed or posted. The policy and objectives shall be understood at all levels of the organization. Management shall have expressed its commitment to meet or exceed contract requirements.

#### **6.1.2 Commitment**

The policy shall be available and used as the source of direction and authority for the development and implementation of the elements of the Quality System. This policy should emphasize the applicant's commitment to quality and to providing services and a finished product conforming to specified quality standards.

#### **6.1.3 Organization**

The responsibility, authority and interrelationship of all personnel who manage, perform and verify work affecting quality shall be defined. These definitions shall specify which personnel have the organizational freedom and authority to:

- Initiate action to prevent occurrence of non-conformity.
- Initiate action to identify and record non-conformance with quality requirements.
- Initiate, recommend or provide solutions through designated channels.
- Verify implementation of solutions required.

##### **6.1.3.1 Organizational Chart**

An Organizational Chart shall be drafted showing individual positions with supervisory, quality, or safety responsibility. Direct labor positions (e.g., bolters, welders) may be shown as a group. The Organizational Chart shall show formal lines of authority and significant lines of communication both at job sites and in the general office, paying particular attention to lines of authority and communication between the two.

**6.1.3.2 Job Descriptions**

Job descriptions shall be developed for all positions with supervisory authority or quality and/or safety responsibility.

**6.1.3.3 Biographical information of Supervisors, Quality and Safety Personnel**

Information regarding the experience and qualifications of employees with supervisory, quality and/or safety responsibility shall be available.

**6.1.4 Management Review**

The Quality System shall be reviewed at appropriate intervals by management to assure its continuing suitability and effectiveness.

Management reviews shall include assessment of the results of the internal audit.

Management review shall include a review of summaries of quality and safety measurements and statistics and/or periodic review of current quality issues, problems and activities in an organization.

**6.1.5 Instruction for the preparation of required Procedures**

The applicant must develop and maintain written procedures for application to all projects. Project specific erection procedures must also be available for application to individual projects where those procedures are required by contract, law, regulation, or sound erection practice as defined by the Checklists of this program. These procedures must address required tasks, identify responsibility for performance of those tasks, the frequency of the tasks and identify documentation which must be maintained to verify performance of the tasks.

The Applicant has the latitude of developing the specific written procedures that best fit the needs of its company. However, certain categories of written procedures and records are mandatory for certification. These procedures are included in the Program Application Form and checklists. The Advanced Certified Steel Erector (ACSE) certification level has additional requirements for written procedures. The ACSE is required to maintain procedures on the types of erection work defined for this level only.

**6.1.6 Training**

The company shall document the training and skill levels of its employees through completion of training programs and/or field experience.

**6.1.7 Review of Contract Requirements**

The applicant shall have an established procedure for reviewing all contract documents and project site conditions. The following issues shall be addressed:

- Technical contract requirements are defined and known by affected personnel.
- Technical contract requirements differing from that bid must be resolved.
- The company must have the capability to meet the technical contract requirements.
- Resources are available for performance of the work.
- Prior to start of erection, a written Project-Specific Erection Plan is developed for accomplishing the work in accordance with the technical contract requirements and the company's quality requirements.
- Development of Project-Specific Erection Plans and maintenance of those plans throughout the progress of the work. Management must determine quality requirements prior to start of erection.


## 6.2 Library References

All necessary references applicable to the work being performed shall be available

- ANSI A10.13
- ANSI A10.38
- Operating manuals for Hoisting Equipment
- Operating manuals for Power tools
- AISC Specification for Buildings
- AISC Code of Standard Practice
- ANSI/AWS D1.1
- ANSI/AWS D1.5
- RCSC

## 7. OPERATIONS

### 7.1 Organization, Interfaces and Activity Assignments

The organization shall actually be operating in the same manner as defined in the documentation submitted. Key Personnel shall be assigned to each of the tasks defined by the procedures submitted and required for individual jobs. One person can be assigned more than one task but he or she must be aware of the assignment and be able to demonstrate the capability and capacity to perform the requirements of the tasks assigned. Procedures should define the tasks that must be assigned. A superintendent and delegated safety person must be assigned to each project; in appropriate projects, the same person can hold both positions. 

### 7.2 Project Specific Safety Plan (PSSP)

#### 7.2.1 Review of Project Requirements

7.2.1.1 Prior to start of erection, a written Project Specific Safety plan is developed for accomplishing the work in accordance with the technical contract requirements and the company's quality and safety requirements.

7.2.1.2 Development of Project Specific Safety plan and maintenance of those plans throughout the progress of the work. Management must determine safety and quality requirements prior to start of erection.

#### 7.2.2 Safety functions

- Fall protection practices
- Practices to prevent falling object hazards
- Record of a review for hazardous non-routine tasks and procedures for their performance
- Designation of the qualified and competent persons
- Rescue and emergency response procedures.
- Installation of required safety equipment and performance of required on-site safety training.
- Actively pursuing the company safety goals through compliance with the safety program.
- Records of employee training
- Written non-conformance procedure

### 7.2.3 Safety Equipment

The company shall utilize the safety equipment assigned in accordance with the Project Specific Safety Plan and project requirements in a manner that will allow the erector to meet all requirements.

### 7.3 Project Specific Erection Plan (PSEP)

Operations shall maintain the PSEP in conjunction with management. Written Project Specific Erection Plans shall be made available or communicated to the work force as necessary.

Project conditions and requirements (including, but not limited to: Site conditions, specifications and industry requirements contained in the *AISC Code of Standard Practice*, and all documents incorporated by reference into the contract) are to be reviewed before preparing the PSEP. Relevant documents must be maintained on site. The PSEP should include but is not limited to the following information:

- Delivery, Storage and Sequencing of erection
- Crane selection, site preparation inspection, path for overhead loads (if required) and critical lifts including rigging
- Steel erection activities including stability practices or temporary bracing plans, framing member assembly and connections.

### 7.4 Operational Functions

- Unloading, storing, erecting and fastening the material required to erect the project.
- Maintaining the alignment and the stability of the structure as it is being erected.
- Performing the QA and QC functions assigned.
- Records of employee training
- Designation of qualified and competent persons.
- Written non-conformance procedure

### 7.5 Equipment

Management assigns the equipment required to perform the work in accordance with the Project Specific Erection Plan. This equipment shall be inspected and maintained on a regularly scheduled basis and results shall be documented.

## **8. REQUIREMENTS FOR ADVANCED ERECTORS**

The Advanced Certified Steel Erector Level requires the Applicant to comply with the following additional requirements and/or develop written procedures for the following:

### **8.1 Additional Application Requirements:**

- 8.1.1 A written procedure for rivet removal.
- 8.1.2 A written lead exposure/abatement procedure.

### **8.2 Additional Management Requirements:**

- 8.2.1 Employ a graduate engineer on staff or be capable of demonstrating an ongoing relationship with an engineer who provides guidance on engineering matters for the company.
- 8.2.2 Employ a welding technician on staff knowledgeable in welding and code requirements and capable of writing and overseeing welding procedures.
- 8.2.3 The Applicant shall have a system to record project costs.
- 8.2.4 Schedules must be evaluated, planned and communicated to affected personnel using production meetings.
- 8.2.5 The Applicant will coordinate erection requirements with the fabricator and engineer of Record.
- 8.2.6 When acting as a contractor, the Applicant shall have procedures in place to evaluate whether subcontracted work is being performed in accordance with contract documents.
- 8.2.7 The Applicant shall have a lead exposure/abatement procedure. This procedure shall include periodic testing of personnel and maintenance of appropriate records.
- 8.2.8 The applicant shall have a practice for recognizing and properly dealing with fumes, smoke, and dust.
- 8.2.9 The Applicant shall have procedures for jacking structural steel when jacking is required on the project.

**8.3 Additional Operational Requirements:**

- 8.3.1 Requests for information necessary to resolve discrepancies and variations from contract requirements shall be documented.
- 8.3.2 Test reports or certificates for materials purchased by the erector and intended to become part of the structure shall be available to inspectors.
- 8.3.3 The Applicant shall have a system to control the receipt of incoming material.
- 8.3.4 Records shall be kept showing that structural tolerances have been controlled and checked (lines and grades).