



# **Washington Association of Building Officials**

## **Standard 1702 Steel Fabricator Registration Program**

**July 2010**

# Steel Fabricator Registration Program

## Scope:

This registration program was developed to assist building officials in meeting the requirements imposed in Chapter 17 of the International Building Code (IBC) by “establishing and recognizing” a person, firm or corporation as an “ Approved Fabricator”.

Chapter 17 Section, 1704.2 requires inspections of fabricators of structural load-bearing members and assemblies fabricated on the premises of a fabricator’s shop. The exception outlined in IBC Section 1704.2.1 provides that special inspections as required by 1704.2 may not be required where the fabricator is approved in accordance with section 1704.2.2. This program requires a review of fabricators’ written procedural and quality control manual. It also requires periodic auditing of fabrication practices to maintain a quality control system backed up by an organization with the qualified personnel, procedures, knowledge, and equipment needed to produce fabricated structural steel components for use in building construction. The “Steel Fabricator Registration Program” sets forth those requirements for the review of documents, procedures, equipment, and key personnel.

The program also aids the design community, registered WABO Special Inspection/Testing Agencies and the fabrication industry by providing a standardized process for evaluating and registering fabricators of structural steel. Work done on the premises of an “Approved Fabricator” is not subject to special inspection as required by IBC chapter 17 for such work done within the scope of the fabricators quality system manual.

This program is not intended to prevent any fabricator who is not registered with WABO to manufacture structural steel components for building construction. These fabricators, however, would be subject to special inspection at the fabrication facility. WABO’s registration program is not intended to provide inspection and/or evaluation of product quality for individual projects. Neither is it intended to guarantee the quality of specific fabricated structural steel products. The use of this program in part or in its entirety is completely voluntary.



# Steel Fabricator Registration Program

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## A. Purpose

Establish necessary procedures for fabricators to be eligible for registration by Washington Association of Building Officials (WABO) pursuant to Chapter 17 of the International Building Code (IBC).

## B. Category of Registration

Registration as a fabricator may be made by facilities engaged in the fabrication of Structural Steel.

## C. Application

An application form for registration shall be completed and submitted (see Bulletin No. F-09-01). Included in the application form is a requirement for proof of quality control personnel certifications (AWS/CWI and/or ICC Structural Steel and Welding Inspector). The application shall embody an agreement by the Fabricator to abide by the terms of approval and to adhere to the requirements established in this Program. The registration process shall include the following:

1. A letter, on company letterhead, requesting registration from WABO and including the location of the facility to be registered (a separate application is required to be submitted for each facility location).

*Note: Fabricator registration is valid only at the facility listed in the approval. Field fabrication and erection are not covered under the registration. Special Inspection must be performed in accordance with WABO Standard 1701 if the work or portions of the work are subcontracted to fabricators that are not WABO Registered Fabricators.*

2. A detailed Quality Systems Manual on CD-ROM as outlined in Section D.
3. A certificate from a nationally accredited evaluation agency for Structural Steel Fabricator (AISC or IAS), listed in Section E.
4. Payment of the nonrefundable registration fee as outlined in the current fee schedule.

The initial application will expire 12 months after the filing date if the request for registration has not been cleared of corrections following the WABO audit. No registration shall be processed until a new registration application is filed and a new fee is paid. All subsequent related costs will be clearly documented and the fabricator will receive an invoice within 30 days of the charges. Send applications to WABO, PO BOX 7310, Olympia, WA 98507

#### **D. Quality Systems Manual (QSM)**

The applicant shall submit a detailed QSM on CD-ROM that includes the following key quality control procedures which will provide a basis for inspection control of workmanship at the fabrication facility.

##### 1. General

- a. Table of Contents
- b. The facility's quality policies
- c. An organizational chart and qualifications of key quality personnel. Clearly define relationships of production and quality control to management personnel.
- d. Signatures of key personnel authorized to sign for the company.
- e. A physical outline of the facility and a drawing showing the facility layout.
- f. A list of appropriate codes and standards maintained in the technical library (i.e. IBC, AISC, AWS referenced standards).
- g. A list of facility equipment to be used in fabrication.

##### 2. Quality Control (QC)

- a. A general description of quality control procedures as they relate to assuring that the fabrication of components meet specified quality requirements.
- b. An example of a record of inspections and/or tests performed on fabricated structural steel components.
- c. An example of the certificate of compliance required by IBC, Chapter 1704.2.2.
- d. Detailed quality control procedures. Include inspection procedures and a list of equipment and facilities for quality control and procedures for calibration where applicable.
- e. A Standard Operating Procedure (S.O.P.) stating that all subcontracted work will be with another WABO Registered Fabricator or that special inspection shall be provided in accordance with WABO Standard 1701, IBC Chapter 17 and this Program.
- f. A list of quality control personnel, giving position, name, years of quality control experience or other qualifications and the name of the immediate supervisor. Include current certifications and qualifications of facility QC inspectors (including backup or 2<sup>nd</sup> shift inspectors). QC personnel shall maintain current ICC Structural Steel and Welding Special Inspector, and/or AWS/CWI certifications.
- g. QC personnel shall be employed on a full time basis by the fabricator for each registered facility. Their primary responsibility shall be quality control.

## E. Evaluation/WABO Audit

1. WABO requires nationally accredited certification by one of the following evaluation agencies for Structural Steel Fabricator:
  - a. American Institute of Steel Construction (AISC)
  - b. International Accreditation Service (IAS)
  
2. The WABO audit shall include:
  - a. A verification of the information submitted with the application for registration.
  - b. Interviews conducted with key quality control personnel.
  - c. An evaluation of the organization in operation, specifically, procedures used in functions affecting quality assurance.
  - d. A facility audit conducted by a WABO Technical Consultant. The purpose of the audit is to verify conformance with the fabricator's application and quality systems manual (QSM). Included in this process will be the following:
    1. Successful completion of an oral interview administered to key quality control inspectors.
    2. Successful completion of a written examination for registered fabricators by one or more key quality control inspectors that covers Quality Control Provisions of this program, and technical reference standards for categories of registration. The written examination questions are based on current editions of the following technical reference materials:
      - a. WABO Standard 1702
      - b. International Building Code (IBC)
      - c. Manual of Steel Construction (AISC)
      - d. AWS Welding Codes: D1.1, D1.4, D1.8
      - e. AISC Seismic Provisions 341

*Note: Purpose of these examinations is to establish and maintain a consistent approach to verifying quality control personnel qualification and to assess his/her technical code knowledge and competence in coordinating overall quality control for shop fabrication in accordance with industry practice, chapter 17 of the IBC, AWS, AISC codes and the WABO Steel Fabricator Registration Program. A combined score of 75%, with no less than 65% on either the interview or exam, is considered passing. If applicant fails, they are eligible to submit a new exam and/or interview application 30 days after the initial failure. If applicant fails first retest, they must wait 6 months from date of failure to submit a new application.*

3. A recommendation by the Technical Consultant to WABO regarding registration.

## **F. Fees**

Each submitted application shall be accompanied by the registration fee. All fees are shown in the Steel Fabricator Registration Program Fee Schedule, and shown on the application forms. Upon completion of the facility audit, WABO will send an invoice to the fabricator for payment of fees based on the current prevailing hourly rate, plus expenses. Expenses include WABO consultant travel time, transportation, and meals and lodging when necessary.

All fees shall be paid in full prior to the final action by WABO, regardless of whether the registration is recommended or denied. These fees are not refundable once work has been performed by WABO.

## **G. Registration Policy**

Following recommendation for registration by the WABO Technical Consultant, a Certificate of Registration will be issued to the fabricator. In addition, continued registration is contingent upon compliance with the following:

1. One set of design drawings (identical to the local jurisdiction-approved permit documents) and one set of fabrication drawings approved by the Registered Design Professional must be in the facility during fabrication.
2. At completion of fabrication, the registered fabricator shall submit a Certificate of Compliance to the building official, stating that the work was performed in accordance with the approved construction documents. (Per IBC Chapter 17)
3. All records of production and quality control shall be maintained and available to the local jurisdiction, the engineer, and the project special inspection/testing agency for review at any time.
4. The facility shall notify WABO, within 30 days, of any major modifications in the quality control manual and/or key quality control personnel submitted for registration.  
Major modification:
  - a. relocation of the fabricator facility
  - b. change in corporate structure
  - c. change in key quality control personnel

## **H. Renewal/Revocation**

1. Registrations shall be renewed annually. Renewal notices will be sent sixty days prior to the expiration date. A renewal audit will be performed every three years, from the date of registration, to validate conformance with Standard 1702 for Steel Fabricator Registration.
2. Any registration can be revoked, suspended, or denied registration for, but not limited to the following:

- a. Failure to abide by all requirements of the WABO Steel Fabricator Registration Program or the conditions of registration set forth in WABO's letter of registration.
- b. Failure to notify WABO of any modifications as required by Section G.
- c. Failure to maintain a current nationally accredited certification by the evaluation agency approved by WABO.
- d. Failure to submit a complete application.
- e. Submission of an application which contains intentionally misrepresented facts and information.
- f. Falsification of records of any type
- g. Confirmation of allegations of willful or negligent failure to observe or report violations of the Building Code or failure to properly and effectively conform to their responsibilities inherent in this Program.

## I. Audit Procedures

There are two parts to the registration process; Part I covers review of the fabricators quality systems manual, Part II contains two sections; section A covers quality control records and key quality control personnel interviews and exams, section B verifies facility quality control operations.

This check-list is used in conjunction with IBC, AISC, AWS, and ASTM codes and standards for reviewing quality control manuals and conducting site audits. 100% compliance is required of all quality systems manuals prior to scheduling site audits.

### Quality Systems Manual (QSM)

#### PART I: Manual review

- \_\_\_\_\_ QSM has been approved by a nationally recognized accrediting body (AISC or IAS)
- \_\_\_\_\_ Signatures of all key Quality Control (QC) personnel authorized to sign QC reports and/or certificate of compliance
- \_\_\_\_\_ Organizational chart reflecting key QC personnel at their current positions and outlines their scope of work
- \_\_\_\_\_ QC manual indicates a separation of responsibility for production and quality control  
How? \_\_\_\_\_
- \_\_\_\_\_ QSM has a procedure to identify incoming material
- \_\_\_\_\_ Sample of daily inspection reports used by quality control welding inspectors is on file
- \_\_\_\_\_ Written procedure for identifying and reporting non-conforming material or work
- \_\_\_\_\_ Welding inspectors are AWS/CWI or ICC Structural Steel and Welding Special Inspector certified
- \_\_\_\_\_ QSM requires inspection of all welds by a certified inspector

- \_\_\_\_\_ Standard operating procedure (SOP) confirms that either subcontracted work will be by other WABO Registered Fabricators, or written procedures that inform subcontractors of special inspection requirements as prescribed by IBC Chapter 17
- \_\_\_\_\_ QSM has a provision that indicates welding inspectors/ quality control personnel have read the manual
- \_\_\_\_\_ List third party testing agencies used for NDE testing. \_\_\_\_\_
- \_\_\_\_\_ Facility should have a written practice for the control and administration of NDT personnel, training, examination and certification. *ASNT No SNT- TC 1A*
- \_\_\_\_\_ There is reference to the location of weld procedures, weld certification (shipping, storage, handling, installation and inspection)
- \_\_\_\_\_ Examples of welder certification, standard weld procedures, and PQR as needed in QSM
- \_\_\_\_\_ QSM indicates if two shifts are used, if so, provides back-up QC personnel
- \_\_\_\_\_ QSM contains a list of required inspection equipment as follows:
  - \_\_\_\_\_ Torque wrench for high strength bolts
  - \_\_\_\_\_ Inspectors identification stamp or tags
  - \_\_\_\_\_ NDE equipment, if applicable
  - \_\_\_\_\_ Thermometer and temperature-sticks
  - \_\_\_\_\_ Bolt tension calibrator (i.e. Skidmore Wilhelm)
  - \_\_\_\_\_ amp/volt meter, if applicable
  - \_\_\_\_\_ Weld viewing
  - \_\_\_\_\_ Hammer for weld testing
  - \_\_\_\_\_ Strong hand light
  - \_\_\_\_\_ Steel rule
  - \_\_\_\_\_ Fillet weld gage
- \_\_\_\_\_ Procedures for maintaining training records  
Who is responsible for their accuracy? \_\_\_\_\_
- \_\_\_\_\_ Statement that clearly gives quality control the authority to stop work and inform operations supervisor of non-conforming work
- \_\_\_\_\_ QSM maintains a list of technical reference material as follows:
  - \_\_\_\_\_ Current edition AISC Manual of Steel Construction
  - \_\_\_\_\_ AISC 341 – Seismic Provisions
  - \_\_\_\_\_ AISC - Quality Criteria and Inspection Standards
  - \_\_\_\_\_ AWS welding codes, D 1.1, D1.3, D1.4, D1.8 and B1.11 - guide for visual inspection
  - \_\_\_\_\_ AWS A5.XX - Specification for electrodes and shielding gases
- \_\_\_\_\_ QSM contains a written method/procedure for notifying the jurisdiction of fabrication and shipping dates for each project within a City's jurisdiction.
- \_\_\_\_\_ QSM contains a copy of a Certification of Compliance statement as prescribed by IBC Chapter 17. This statement must include language that confirms fabricated work was fabricated in accordance with the approved plans and specifications.

**PART II:**

Once the manual has been reviewed and approved, the following procedures shall apply:

All audits consist of two sections: Section A includes a conference discussion with management and other key QC personnel on WABO expectations and a review of WABO Standard 1702: Steel Fabricator Registration Program, covering quality control inspections and verification of records. Next, the QC personnel will be interviewed to verify his /her knowledge on typical questions used to certify special inspectors. A written exam is also administered. Questions will come directly from IBC, AWS, ASTM and AISC Standards. A combined score of 75%, with no less than 65% on either the interview or exam, is considered passing. A back-up inspector should also be interviewed.

**Section A:** Interview and exam questions are confidential.

**Section B: Conducting the audit**

- \_\_\_\_\_ Certified mill test reports are kept on file
- \_\_\_\_\_ The grade of material and marking is verified prior to fabrication, during, and to restocking cut pieces
- \_\_\_\_\_ Workmanship is checked throughout the fabrication process  
How is this recorded? \_\_\_\_\_  
Is it per the QSM? \_\_\_\_\_
- \_\_\_\_\_ All pieces receive a final inspection  
How is a record kept of this inspection? \_\_\_\_\_
- \_\_\_\_\_ Inspectors have the minimum equipment available ie, tapeline, weld gages, strong hand light, thermometer & temp stick torque wrench for high strength bolts, amp/volt meter and skidmore wilhelm
- \_\_\_\_\_ Non-conforming work is documented tracked  
How? \_\_\_\_\_
- \_\_\_\_\_ It is in writing that quality control has the authority to stop work and require necessary repairs or corrections be made
- \_\_\_\_\_ Fabrication is showed to be in accordance with the approved construction documents  
Method: \_\_\_\_\_
- \_\_\_\_\_ How are RFI's handled in the shop? \_\_\_\_\_  
Who must sign-off? \_\_\_\_\_
- \_\_\_\_\_ Technical reference library contains the following texts: (Structural Steel)
  - \_\_\_\_\_ WABO Standard 1702
  - \_\_\_\_\_ Current International Building Code (IBC)
  - \_\_\_\_\_ Current American Institute of Steel Construction, Seismic Revisions
  - \_\_\_\_\_ Allowable Stress Design (ASD), Steel Manual

- \_\_\_\_\_ Load and Resistance Factor Design (LRFD) Manuals
- \_\_\_\_\_ Simple Shear Connections
- \_\_\_\_\_ Structural Steel Detailing Manual
- \_\_\_\_\_ Engineering and Quality Criteria for Steel Structures
- \_\_\_\_\_ Shop Inspectors Training Guide

American Welding Society –

- \_\_\_\_\_ Structural Welding Code AWS D1.1
- \_\_\_\_\_ Sheet Steel Welding Code AWS D1.3
- \_\_\_\_\_ Reinforcing Steel Welding Code AWS D1.4
- \_\_\_\_\_ Seismic Welding Supplement AWS D1,8
- \_\_\_\_\_ Standard Weld Symbols AWS A2.4

American Society for Testing and Materials -

- \_\_\_\_\_ ASTM A6

- \_\_\_\_\_ High strength bolts; installation & inspection quality control procedures
- \_\_\_\_\_ Calibrated bolt tension device is logged in and used
- \_\_\_\_\_ Proper storage and identification of each shipment
- \_\_\_\_\_ Personnel training records
- \_\_\_\_\_ All bolts, nuts and washers checked for conformance to specifications
- \_\_\_\_\_ Bolt tension calibration device is available for pre-installation testing and wrench calibration
- \_\_\_\_\_ Installers have reviewed written tightening procedures and they are used
- \_\_\_\_\_ Welding personnel qualification records are available
- \_\_\_\_\_ Lists of needed welding procedure specifications (WPS) are prepared for project – they are reviewed and approved by design engineer
- \_\_\_\_\_ Audit (in-house record) of welding personnel
- \_\_\_\_\_ WPS are available to welder and QC staff
- \_\_\_\_\_ Welding equipment calibration records are available
- \_\_\_\_\_ There is a filler metal storage policy and it is being followed.
- \_\_\_\_\_ Demonstrate conformance with WPS using amp/volt meter
- \_\_\_\_\_ Welding processes are used
- \_\_\_\_\_ Non Destructive Testing Policy exists and is being used
  - \_\_\_\_\_ Subcontracting firms \_\_\_\_\_
  - \_\_\_\_\_ Data-forms \_\_\_\_\_
- \_\_\_\_\_ Agency and personnel certifications and verifications

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