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T E C H N I C A L B U L L E T I N

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Topic: **Inspection of Fabricators**

This document is a guideline to assist code enforcement officials and design professionals in their efforts to secure compliance with Section 1704.2, Inspection of Fabricators, from Chapter 17 of the *Building Code of New York State.*

List of Abbreviations
BCNYS; *Building Code of New York State*
CEO; Code Enforcement Official
IAS; International Accreditation Service, Inc.
QCM; Quality Control Manual
SI; Special Inspection(s), Special Inspector(s)
UC; Uniform Fire Prevention and Building Code

SI is required of structural load-bearing members and assemblies that are being fabricated on the premises of a fabricator's shop. The BCNYS assumes that every fabricator has an established quality control program and quality control personnel conducting inspections and verifying that all work is in conformance with the approved construction documents. The role of the SI is:

1. To *verify* that the fabricator maintains detailed fabrication and quality control procedures that provide a basis for inspection control.
2. To *review* the fabricator's procedures for completeness and adequacy relative to the code requirements for the fabricator's scope of work.

Can a fabricator become pre-approved?

Yes. According to BCNYS Section 1704.2.2 the CEO has the authority to pre-approve fabricators and not require SI. The pre-approved status is based upon the CEO's review of the fabricator's written procedural and quality control manuals and documentation showing the periodic auditing of the fabrication practices by an approved *special inspection agency*.

BCNYS Section 1702.1 defines an approved agency as "An established and recognized agency regularly engaged in conducting tests or furnishing inspection services, when such agency has been approved."
BCNYS Section 1703.1 specifies the minimum criteria that qualifies an agency to be approved. The criteria are:

1. **Independent**. The SI shall be objective and competent. The SI shall disclose possible conflicts of interest so that objectivity can be confirmed.
2. **Equipment**. The SI shall have adequate equipment to perform the required tests. The equipment shall be

periodically calibrated.

3. **Personnel**. The SI shall employ experienced personnel educated in conducting, supervising and evaluating tests and/or inspections.

Although this requirement is new to the UC since it's inception on January 1, 2003, it is not a new practice to the fabrication industry as a whole. There are organizations that provide and facilitate quality control programs for fabricators. These organizations provide certifications for fabricators. The certification is a recognition that promotes the fabricator's ability because of their personnel, experience, resources, knowledge, procedures, and commitment to provide products that are in accordance with approved construction documents and specifications. Additionally, fabricators are subject to audits by their certifying agency in order to maintain their status or membership. A listing of some well known fabricator certifying organizations is shown in the following table. Note that this is not to be considered a complete listing and that other certifying agencies can and may exist.

Fabricator Certifying Organizations

Type of Fabricator	***Certifying Organization***
Structural Steel	*American Institute of Steel Construction (AISC)*
Steel Joists	*Steel Joist Institute*
Precast and Prestressed Concrete	*Precast/Prestressed Concrete Institute*
Wood Construction BCNYS Section 1704.6	*Truss Plate Institute*

Additionally, the IAS is an organization that provides accrediation services to testing laboratories, calibration laboratories, special inspection agencies and fabricators. The IAS is prevalent on the West Coast and may not have a significant presence in New York State for a few years. For further information regarding the IAS go to their website at www.iasonline.org .

Suggested Minimum Guidelines for Qualifying Fabricators

Fabricators who are not affiliated with an organization listed in the table above may petition CEOs for a pre-approved status. The fabricator shall demonstrate to the CEO that their organization has the personnel, relevant experience, resources, knowledge, procedures, and commitment to provide products that are in accordance with approved construction documents and specifications. The fabricator shall submit their written procedural and QCM and periodic auditing practices by an approved special inspection agency. An integral part of the QCM is the involvement of a separate firm or agency acting as the SI for the fabricator. The QCM should be signed and dated by the highest level of authority within the fabricator organization. The minimum information in the QCM should include the following:

1. **In-house personnel:** The fabricator should provide the name(s) of the individual(s) who serve as the quality control manager and also designate the in-house quality control inspector(s). The fabricator should provide information that demonstrates the qualifications of the named individual(s). Refer to Technical Bulletin, December 2003, Volume 5 - No. 7, Structural Tests and Special Inspections, for information regarding the core requirements of SI.

2. **Quality Plan:** Provide a written document within the QCM that describes the procedures and policies implemented to assure product quality meets specific approved construction documents.

3. The fabricator shall identify the SI who will be acting as their certifying agency (Special Inspection Agency) and performing audits on their quality control practices and procedures. Include sufficient supporting information

that shows that the SI is qualified to be performing the on-site inspections. The SI must be familiar and demonstrate knowledge of codes and specifications for the scope of the work performed by the fabricator. Refer to Technical Bulletin, December 2003, Volume 5 - No. 7, Structural Tests and Special Inspections, for information regarding the qualifications of SI.

4. **Periodic Auditing by Special Inspection Agency:** The BCNYS Section 1704.2.2 specifies periodic auditing of fabrication practices by an approved Special Inspection Agency. Although no specific frequency is given, the frequency of auditing a fabricator's practices is subject to the approval of the CEO. A recommended maximum frequency for a Special Inspection Agency to perform an audit of the fabricator's practices is one year.

5. **Quality Policy Statement:** The following statements should be provided as part of the QCM:

A. All activities of the organization shall be directed in such a manner as to ensure that the quality requirements of the Quality Plan are met.
B. The elements of the quality assurance will be disseminated to all personnel assigned activities that effect the quality of the product.
C. The QC Plan shall be reviewed annually.
D. The CEO will be notified, in writing, prior to any cancellation of the inspection agreement with the approved SI.
E. The fabricator shall promptly respond to the CEO when notified of any notice regarding the noncompliance of a fabricated product with the approved construction documents.

6. **Written Procedures:** The fabricator should submit written procedures for the following:

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

B. Document control: Control of documents and data relating to the quality functions of the fabricator. This control should include the following:

1. A means of document approval.
2. A means to ensure that only current, approved documents are used.
3. A means of ensuring that documents are available at all locations where necessary for the proper functioning of the quality system.
4. Identification of assignment of responsibility for the preparation, review and control of revisions to contract documents, including detail drawings.

C. Purchasing:

1. Determining that the purchased products will conform to specified requirements.
2. Evaluation of subcontractors for their ability to meet subcontract requirements.

Evaluations may contain summaries or logs, but must include a means of quantifying and measuring the ability of the subcontractor or supplier to provide quality products or services consistent with the required contract documents.

D. Product traceability: The product traceability procedure should describe the method used to ensure 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 product documents will determine if full materials traceability is required, however, the fabricator should have in their control the traceability of the finished product to:

1. Incoming raw materials
2. Responsible welders.
3. Plans and specifications.
4. Quality records.

E. Process control:

1. Responsibility for developing welding procedure specifications and bolt installation procedures that conform with contract drawings and specifications.
2. Responsibility for verification of welding procedure specifications and bolt installation procedures.
3. Verification of dimensional accuracy.
4. Verification of surface preparation for protective coatings.

F. Inspection and testing: The inspection procedure should include provisions for receipt, in-process and final inspections, as appropriate, to provide a level of assurance that products are manufactured in accordance with contract documents and by qualified personnel. Final inspections should include a record of the results and resolution of nonconformances identified by subsequent inspections. As a minimum, inspection procedures should include the following:

1. Receiving inspection of incoming materials to the required specification, including review of mill test reports and certificates of conformance to ensure compliance with contract documents.
2. 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.)
3. Final inspection includes documented acceptance of all workmanship performed, including materials, welding, bolting, fitting operations and coatings. All final welds should be accepted under the direction of the in-house certified welding inspector.

G. Control of inspection, measuring and test equipment:

1. The maintenance schedule and calibration procedures for testing equipment.
2. Ensuring traceability of calibration to nationally recognized standards. 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 fabricator's responsibility to ensure that such testing equipment is approved prior to use.

H. Control of nonconforming workmanship: Methods shall be established for identifying, documenting and the correcting or disposing of nonconforming items.

I. Corrective action: A procedure for investigating, documenting and correcting nonconformances with a provision to preclude repetition should be included.

J. Handling, storage and delivery procedure should include identifying and storing of incoming materials and finished products as appropriate to minimize damage and deterioration.

K. Internal audits: The fabricator should identify the frequency, method of documentation and the content of internal audits to determine the effectiveness of the quality system. Audits should include a summary that compares the most recent audit to the previous audit.

L. Control of quality records: The fabricator should include methods for storing, maintaining and accessing quality records for a minimum of two years. Such records include but are not limited to the

following:

1. In-house quality inspection reports, forms, checklists.
2. Manufacturer test reports and certificates of compliance from vendors, for incoming materials and consumables.
3. Copies of inspection reports by the inspection agency.
4. Records of internal audits.
5. Training records.
6. Evaluations of vendors and subcontractors.

M. Training: Training of all personnel who have an effect on the quality of the finished product and for maintaining current personnel qualifications.

Any fabricator with a pre-approved status must provide a certificate of compliance to the CEO at the completion of fabrication. The certificate of compliance must include a statement confirming that the work was performed in accordance with the approved construction documents.

Can a CEO accept a product based upon the submission of an Evaluation Report?

Yes. Pursuant to BCNYS Section 104.11, an evaluation report can serve as a basis of approval for a product that is fabricated or otherwise manufactured. For example, Simpson Strong-Tie Co., Inc. has evaluation reports for many of their fastening and anchoring products. For more information on product evaluations, go to www.dos.state.ny.us/code/evalofprod.htm .

Although BCNYS Section 1704.2 does not address the situation of a fabricator that is not engaged in a quality control program, it does not prohibit such fabricators to be used in a building construction project. Fabricators that do not have a quality control program similar to what is described herein are then subject to the same SI requirements as are components that are constructed on a project site. Refer to Technical Bulletin "Structural Tests and Special Inspections," for information regarding the core requirements of SI.

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