
GUIDELINES FOR DESIGN AND CONSTRUCTION OF "STEEL BUILDING SYSTEMS"

Forword

The principle mandate of Professional Engineers and Geoscientists of Newfoundland & Labrador (PEG-NL) is to regulate the practice of engineering and geoscience and to govern its members in order that the public is best served. The design of steel building systems (pre-engineered buildings) falls within the "Practice of Engineering" as defined in the Engineers and Geoscientists Act and consequently must be carried out by a professional engineer (P. Eng.) who shall become the Structural Engineer of Record (SER). The National Building Code of Canada (NBCC) also requires that Steel Building Systems (SBS) be designed by a P. Eng. and that the designer or other qualified person review the approval/erection drawings and construction to determine conformance with the design. These procedures have been developed to assist the P. Eng. in the preparation of design drawings and specifications for the design of SBS. They will also be used as a reference document in disciplinary cases when adjudicating allegations of unskilled practice of the profession.

Effective engineering design requires sufficient documentation to convey the design intent and should: permit review; ensure that codes and standards are met; facilitate accurate tendering of the work; minimize change orders due to omissions or conflicts; provide an accurate record of the installation and be helpful in the operation and/or use of the engineered structure, system or facility. Effective communication through the preparation of engineering drawings and specifications is essential for the implementation of cost-effective design and for the ultimate protection of the public interest. These procedures are intended for members of the engineering profession and represent a standard of practice all members are encouraged to adopt. These procedures deal in an advisory way with matters of practice and procedure rather than with matters of substantive engineering. It is not a legal document and is not intended to supersede or replace contractual arrangements designed to satisfy specific situations where good engineering practice might, in certain circumstances, dictate departure from these procedures.

These procedures should be read in conjunction with Guidelines for Structural Engineering Services as published by PEG.

Definitions

Steel Building Systems (SBS)

A Steel Building System (SBS) is a building system in which steel structural and cladding components plus applicable appurtenances are engineered to facilitate production and to permit assembly in various combinations. The SBS can take the form of framed buildings (i.e. rigid frame structures) or frameless buildings (i.e. stressed skinned structures).

Structural Engineer of Record (SER)

The professional engineer who produces and is responsible for the structural design documents which are issued for construction.

Responsibilities of the SER

Some of the duties of that the Structural Engineer of Record (SER) may be professionally responsible for, on behalf of the owner, include:

- ◆ the preparation of the structural design specifications for the SBS
- ◆ the review of the SBS approval/erection drawings for conformance with the design specifications
- ◆ review of the SBS construction to determine conformance with the design specifications

Procedures

In carrying out these responsibilities the SER should use the following procedures as a guideline in preparing contract documents:

- ◆ If there is no SER acting on behalf of the building owner or contractors, the SBS manufacturer shall become the SER and will be responsible to ensure that all changes to environmental, seismic and occupancy loads applied to the SBS meet the requirements of the NBCC for the SBS location.
- ◆ The SER completes and stamps design specifications and drawings, which clearly define all the design criteria required by the SBS manufacturer. These include snow loads, occupancy loads, wind pressures, seismic parameters, dead loads, crane loads, equipment loads, deflection limits and any other parameters which may affect the design of the SBS.
- ◆ The SER shall specify that the SBS manufacturer provide a Certificate of Design and Manufacturing Conformance, to CSA Standard A660-M. This certificate shall be dated, signed and sealed by a professional engineer licensed to practice in the Province of Newfoundland and Labrador.
- ◆ The SER shall also specify the warranty period required for the various structural components of the building system.
- ◆ The SER reviews the approval/erection drawings, but only after they have been stamped by the contractor, stating that he/she has reviewed them for compliance with the contract documents. The SBS approval/erection drawings must also be sealed by a professional engineer licensed to practice in the Province of Newfoundland and Labrador.
- ◆ Changes to loading or structural components to the SBS prior to approval/erection drawing review must be approved by the SBS manufacturer in writing. Proposed changes during

construction must be approved by the SBS manufacturer, incorporated into the approval/erection drawings by the SBS manufacturer and resubmitted for review.

- ◆ The SER shall specify on the stamped design specifications and drawings that future extensions or modifications to the primary structural system, designed and supplied by the SER, cannot be performed unless authorized in writing by the SBS manufacturer. Any such extensions and/or modifications shall also have an SER with the same responsibilities as defined herein.
- ◆ The SER shall specify that the SBS manufacturer or its agent (building erector) carry out a final inspection of the SBS for conformance with their fabrication and erection drawings. The agent shall provide a stamped inspection report upon completion of the work clearly identifying any deficiencies in the work. Subsequent inspections must also be carried out by the manufacturer/agent to verify corrections to any deficiencies. Follow up inspection reports must also be stamped.
- ◆ The SER is responsible for the overall building design and therefore must coordinate the design between the pre-engineered portions of the overall building and the non pre-engineered building components.

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