



## Design for Deconstruction of a Steel Building System

### Introduction

The Canadian Standards Association has recently published CSA Z783-12 Deconstruction of Buildings and Their Related Parts. Included in this standard are the minimum requirements for processes and procedures connected with the deconstruction of buildings. It is intended for use by contractors, consultants, designers, building owners, regulators and value chain organizations involved in the deconstruction of a building that is at the end of its life or when it is undergoing renovations or alternations.

In the introduction to the section on design it states “To simplify the deconstruction process, it is possible to incorporate features during the design and construction phase. CSA Z782 is a voluntary guidance document that provides a framework for reducing building construction waste during the design phase.” Of primary interest under section C, Building envelope, is C.5.5.3 note 1 identifying Steel Building Systems (SBS) as being ideally suited for deconstruction and reuse.

Deconstruction and reuse are not uncommon and have been conducted with various levels of success for decades. Certain features make SBS particularly suitable. Connections are bolted instead of field welded, the parts can stand up to being re-handled without damage, panels that are not caulked can be reused, and big spans mean easy adaptation for other uses. A reusable building adds value to the owner and improved return on the investment. The responsibilities of the parties involved are well defined in Section 6, Project management and oversight, of CSA Z783-12. The primary roles are conducted by the owner (or owner’s representative), and the contractor.

In the introduction to the section on deconstruction, the reuse of the building should be considered as the first option. For new construction SBS is an excellent choice. Not only have SBS buildings been recognized as being ideally suited for deconstruction, with proper insight and guidance at the front end, SBS can make the process more seamless and transparent.

### For More Information

For more information on sheet steel building products, or to order any CSSBI publications, contact the CSSBI at the address shown below or visit the web site at [www.cssbi.ca](http://www.cssbi.ca)

## Checklist

### Initial

- In the initial planning stages the benefits of a reusable building need to be weighed.
- A review of the current CSA-A660 Certificate of Design and Manufacturing Conformance needs to be conducted. The minimum design loads and standards need to be determined. In general the higher the design loads selected, and the stricter the standard chosen, the wider the opportunity for reuse.
- Other suggested publications to be reviewed at the initial stage are CSSBI S17-2005 Guide Specification for Steel Building Systems and CSSBI 30M-06 Standard for Steel Building Systems.
- Once the loads and codes have been established the flexibility in design can be considered. For example, the SBS can be designed with large spans, expandability and with nonintrusive wall bracing.

### Ordering

- Additional copies of drawings and manifests need to be requested. If required in the future, replacement parts can be made based on this information.
- All high strength bolts need to be catalogued as these will have to be replaced.
- Additional information may be requested at this time as well. An example might be mill test certificates, which are useful for steel traceability. It is important to note that any required documentation must be requested at the SBS order stage. Requests after this stage may create difficulties and delays.

### Field Assembly

- Photograph the loaded trucks upon arrival. Photographing each crate and bundle is suggested as well. Parts can stand up to be re-handled and how the SBS was loaded initially will be valuable reference information in the future.
- The SBS components will be marked and referenced on the drawings. Additional component identification may be added to the drawings and parts depending how and where the part is located.

### Usage

- SBS are low maintenance facilities. However documented annual inspections should occur.
- The building may be changed prior to being relocated. Changes could include the addition or relocation of cranes, doors, roof top units, mezzanines or any other component connected to the SBS.
- All changes need to be documented along with the proper approval of any structural modifications.

### Relocation

- The intent of all the documentation noted above is to make the process more seamless and transparent, as well as maintaining a record of the original building parameters and addition or changes to it. In all probability the SBS will require re-certifying for its intended new use and location.
- The SBS can be relocated more than once in which case the process will need to be reviewed and completed again.