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A344-17

User guide for steel storage racks

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User guide for steel storage racks



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Preface

This is the first edition of CSA A344, *User guide for steel storage racks*. It replaces CSA A344.1 published under the same title in 2005.

Following the withdrawal of CSA A344.2, and its subsequent incorporation into CSA S16, this Guide has been designed as a stand-alone document. The contents of this new Guide have been expanded from the contents of A344.1 and are linked with both CSA S16 and CSA B335.

This Guide, used in conjunction with CSA B335, establishes the requirements for a safe environment where steel storage racks and lift trucks are the primary equipment of the workplace. The typical workplaces affected by these documents are warehouses and distribution centers.

Significant changes from CSA A344.1 include:

- a) extensive references to CSA S16;
- b) addition of many illustrations and photos;
- c) addition of example reporting forms;
- d) addition of provisions for fasteners and bolts (Clause 6.5);
- e) expansion of the clause on the use of racking systems (Clause 7);
- f) expansion of the clause on the assessment of damage and deficiencies (Clause 8.2);
- g) expansion of the clause on corrective actions (Clause 8.3);
- h) addition of a new clause on modifications to racking systems (Clause 8.4); and
- i) addition of provisions for the linking of the Guide to requirements in building codes and OHS legislation, and to structural requirements in CSA S16 (Clause 9).

This Guide has been prepared by the Technical Subcommittee on Use of Steel Storage Racks, under the jurisdiction of the Technical Committee on Industrial Lift Trucks and the Strategic Steering Committee on Occupational Health and Safety, and has been formally approved by the Technical Committee.

Notes:

- 1) *Use of the singular does not exclude the plural (and vice versa) when the sense allows.*
- 2) *Although the intended primary application of this Guide is stated in its Scope, it is important to note that it remains the responsibility of the users of the Guide to judge its suitability for their particular purpose.*
- 3) *This Guide was developed by consensus, which is defined by CSA Policy governing standardization — Code of good practice for standardization as “substantial agreement. Consensus implies much more than a simple majority, but not necessarily unanimity”. It is consistent with this definition that a member may be included in the Technical Committee list and yet not be in full agreement with all clauses of this Guide.*
- 4) *To submit a request for interpretation of this Guide, please send the following information to inquiries@csagroup.org and include “Request for interpretation” in the subject line:*
 - a) *define the problem, making reference to the specific clause, and, where appropriate, include an illustrative sketch;*
 - b) *provide an explanation of circumstances surrounding the actual field condition; and*
 - c) *where possible, phrase the request in such a way that a specific “yes” or “no” answer will address the issue.*

Committee interpretations are processed in accordance with the CSA Directives and guidelines governing standardization and are available on the Current Standards Activities page at standardsactivities.csa.ca.

- 5) *This Guide is subject to review within five years from the date of publication. Suggestions for its improvement will be referred to the appropriate committee. To submit a proposal for change, please send the following information to inquiries@csagroup.org and include “Proposal for change” in the subject line:*
 - a) *Guide designation (number);*
 - b) *relevant clause, table, and/or figure number;*
 - c) *wording of the proposed change; and*

d) *rationale for the change.*

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User guide for steel storage racks

1 Scope

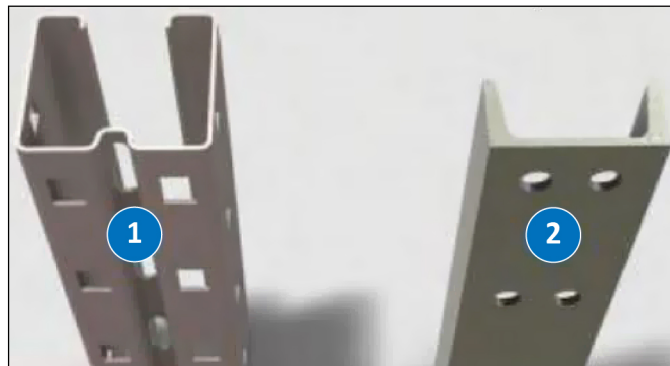
1.1

This Guide applies primarily to selective pallet racks, although the principles set out in this Guide may be used when purchasing and using other types of racks, such as double-deep, push-back, drive-in and drive-through racks, cantilever racks, portable racks, rack-supported buildings, and stacker racks.

1.2

This Guide is limited to pallet racks made of steel that are typically constructed from cold-formed members and/or hot rolled structural sections (see Figure 1).

Figure 1
Cold-formed members (1) and hot rolled structural sections (2)
(See Clause 1.2.)



1.3

This Guide is intended for persons who create specifications for, purchase, and use steel storage racks. In referencing this Guide, the users of steel storage racks will become aware of the considerations required to ensure that their rack installation meets the conditions of the work environment and user expectations.

1.4

This Guide does not apply to shelving.

1.5

This Guide is written in non-mandatory language. In this Guide, “should” is used to express a recommendation or that which is advised but not required, and “may” is used to express an option or that which is permissible within the limits of the Guide.

2 Reference publications

This Guide refers to the following publications, and where such reference is made, it is to the edition listed below, including all amendments published thereto.

CSA Group

A344.2-05 (withdrawn)

Standard for the design and construction of steel storage racks

B335-15

Safety standard for lift trucks

S16-14

Design of steel structures

Government of Canada

Canada Labour Code (R.S.C., 1985, c. L-2)

NRC (National Research Council Canada)

National Building Code of Canada, 2015

3 Definitions

The following definitions apply in this Guide (see Figure 2):

Anchor — a mechanical or adhesive fastener used to secure a pallet rack structure to a building structure, e.g., the baseplate to the floor slab.

As-built drawing — plan and elevation views that have been modified after the installation of a pallet rack to reflect any variations in such installation from the original drawings.

Back-to-back row — two parallel rows of pallet racks that are joined by one or more levels of row spacers between frames.

Baseplate (footplate) — a plate fixed (usually by welding) to the bottom of frame columns to facilitate anchoring to the floor slab and to distribute the weight of the loaded column over a larger area of the floor slab.

Beam (load beam, load support beam, stringer) — a horizontal member, usually arranged in pairs such that the upper horizontal surfaces support pallets placed on them.

Note: *Beams are typically attached to frames by beam connectors welded to each end.*

Beam connector (beam bracket, end plate) — a formed, stamped, or punched part welded to each end of a beam to facilitate attachment to the frame.

Bollard — a stand-alone device, securely mounted to the floor slab, used to prevent impact to column members from moving equipment (e.g., lift trucks) (see Figure 11).

Competent person — a person who

- a) is qualified because of knowledge, experience, and familiarity with this Guide to organize or perform the work in question; or