

# RACKING INFORMATION



The purpose of this document is to provide information concerning the permit requirements for racking and other similar vertical storage systems.

## VERTICAL STORAGE SYSTEM TYPES

### 1. Shelving Units:

- Any vertical storage unit under 2.6 m in height and; in sprinklered buildings, under 900 mm in depth is considered shelving
- In sprinklered buildings, back-to-back shelving units with a combined depth exceeding 900 mm are considered racking unless the units are separated by non-combustible construction or by a minimum 150 mm flue space.
- Shelving units can be constructed of combustible or non-combustible material.
- A building permit is not required for the installation of shelving units.
- It is recommended that shelving units be seismically restrained.

### 2. Single Level Racking:

- A vertical storage unit greater than 2.6 m in height is defined as a structure and the installation of such single level racking requires a building permit.
- With the exception of the actual shelves, this type of storage unit must be constructed of non-combustible material.

### 3. Two Level Racking:

- A vertical storage unit that supports an intermediate elevated walking platform requires a building permit.
- With the exception of the shelves, the structure must be constructed of non-combustible material.
- The number, location, and construction of guards egress stairs for the catwalk system must conform to the requirements of the BC Building Code.
- Hard-wired, interconnected smoke alarm systems are required to cover the entire floor area containing the racking. If the catwalk system has a solid walking surface, smoke alarms shall be installed at each level.
- The walking platform shall be a catwalk system, supported by the racking, providing access to the racking only. No open platform is permitted for the use of storage, manufacturing and assembly.

#### 4. Mezzanines (Not Racking Systems):

A continuous floor system supporting the upper shelving units is considered as a mezzanine rather than a racking system. They, and the building, must be designed to comply with the BC Building Code's requirements for mezzanines (see brochure on Mezzanine Structure).

##### Alternative Solutions:

Racking that does not meet all the requirements of the applicable Code and referenced standards can be considered under an Alternative Solution submission as per the BC Building Code.

##### General Information:

The designer should refer to Part 3 of the BC Fire Code for the requirements of type of products allowed in the building, aisle width, clearances, height and size of storage and sprinkler systems.

If the building is sprinklered the requirements for the design and installation of the sprinkler system in the building and racking shall be in accordance with NFPA 13 as referenced in the current BC Building Code.

Sprinkler system designers and contractors should give special consideration to the details of water line connections between racks and buildings. In rack sprinklers are supported by the racks and attached to the ceiling/roof trusses. Fires after an earthquake are a problem if water lines are broken.

Designers should inform and educate the owner and/or end user to inspect the installation for continuing conformance with those specifications. The maintenance of racks to original manufacturer's specifications is the owner's responsibility as required by the WorkSafe BC. For additional information, visit WorkSafe BC at [www.worksafe.com](http://www.worksafe.com).

The type and height of commodity stored shall meet the requirements of NFPA 13 and the BC Fire Code. If commodity stored is changed or modified, reassessment by professional engineer(s) (Structural and/or Sprinkler System) may be necessary.

Vertical storage units or racking/shelving over 8'6" (2.6m) in height must be designed structurally in accordance with Part 4 of the BC Building Code including seismic restraint. Since the Building Code does not reference standards such as CSA 344 nor RMI racking designed according to these standards is not acceptable. Racking must conform to CSA S16.

### Building Permit Submission Requirements:

Three (3) sets of drawings including but not limited to the following:

- Floor plan showing the layout of the racking including aisle width, location of exits.
- Design of racking including all dimensions, size and material of all structural members.
- Structural drawings including all design criteria such as loading of the commodities, site classification, acceleration and velocity based site coefficients  $F_a$  and  $F_v$ .
- A letter from the Fire Protection Engineer or qualified sprinkler designer is required confirming the adequacy of the existing sprinklers system, or specifying the requirements for any required upgrades. The letter should include:
  - a) Type of commodity stored including hazard classification, i.e. Class I, II, III or IV, and the total height of commodity on the racks.
  - b) Summary of the relevant requirements of BC Building Code, BC Fire Code, NFPA 13 and any applicable standards referenced in NFPA 13.
  - c) If the building is sprinklered the type of sprinkler system, including classification of occupancy, i.e. light hazard, ordinary hazard, extra hazard or special occupancy hazard.
  - d) If applicable, the design of any sprinkler system modification, new system, inrack sprinklers, fire alarm, standpipe, smoke alarms, detectors, etc.
- The structural engineer must submit Letters of Assurance, Schedule B at the time of permit application and subsequently Schedule C-B upon completion confirming the design and field review specifically referencing racking under the structural discipline.
- A letter from a structural engineer is required confirming the structural capacity of the slab and assuring adequate support of the racking.