

Racking – Vertical Storage Systems

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

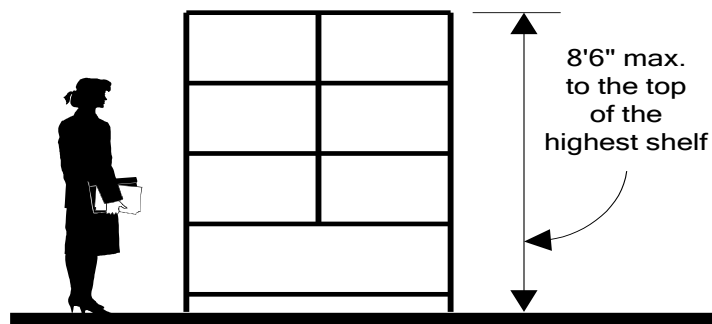
"This information is provided for convenience only and is not in substitution of applicable City Bylaws or Provincial or Federal Codes or laws. You must satisfy yourself that any existing or proposed construction or other works complies with such Bylaws, Codes or other laws."

Other brochures related to this topic

- [Tenant Improvement Permits - Full Plan Review and Fast Track Review](#)
- [Alternative Solution](#)
- [Mezzanine Structures](#)

Vertical Storage System Types

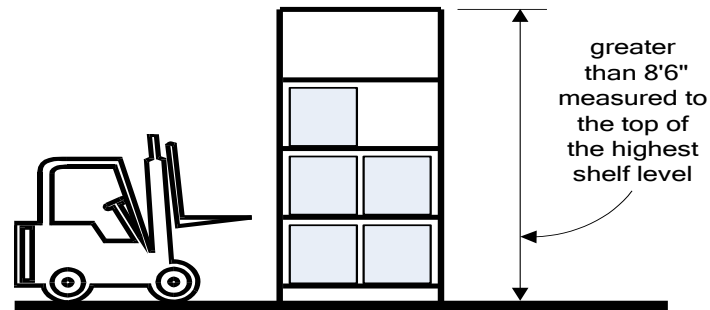
1. Shelving units



NOTE: 2.6m (8'6") height includes 152mm (6") toe kick.

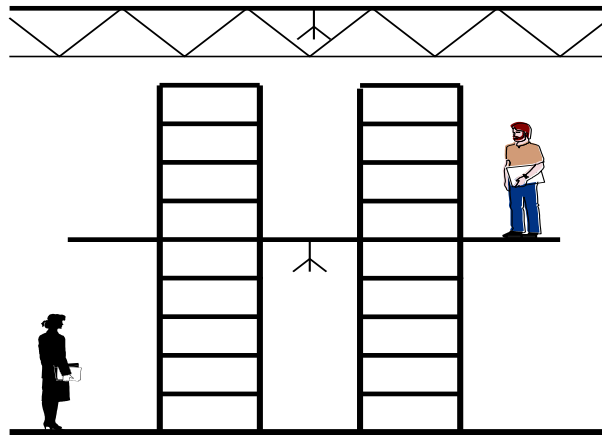
- Any vertical storage unit under 2.6 m (8'-6") in height and, in sprinklered buildings, under 900 mm (30") in depth is considered shelving.
- In sprinklered buildings, back-to-back shelving units with a combined depth exceeding 900 mm (30") are considered racking unless the units are separated by non-combustible construction or by a minimum 150 mm (6") 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



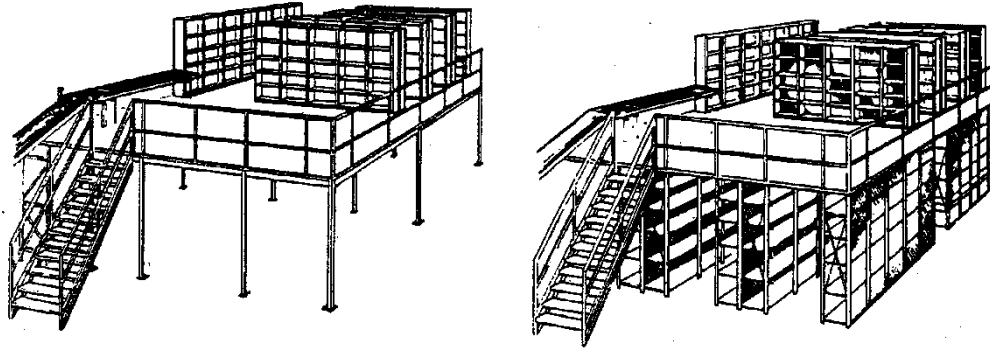
- A vertical storage unit greater than 2.6 m (8'6") in height is defined by the Burnaby Building Bylaw as a structure and the installation of such single level racking requires a building permit.
- With the exception of the actual shelves, this type of storage unit must be constructed of non-combustible 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 and egress stairs for the catwalk system must conform to the requirements of the B.C. Building Code.
- Hard-wired, interconnected smoke alarm system(s) 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 (see diagram above) 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.

- 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.

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:
 - Type of commodity stored including hazard classification, i.e. Class I, II, III or IV, and the total height of commodity on the racks.
 - Summary of the relevant requirements of BC Building Code, BC Fire Code, NFPA 13 and any applicable standards referenced in NFPA 13.
 - 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.
 - If applicable, the design of any sprinkler system modification, new system, in-rack 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.
- [Building Permit Application Form](#), [Schedule F \(Owner's Undertaking\)](#), [Agent Authorization](#) or [Consent to Construction](#) form (if appropriate).

If you require additional information or have any questions, please contact the Building Department at 604-294-7130. For additional information related to the Fire Code and sprinkler requirements, please contact the Fire Prevention Office at 604-294-7195.

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