



Steel Storage Racks

Building Division Interpretations and Procedures

Index Number:	IBC-2021-002
Issue Date:	5/12/2021
Code:	2018 IBC (ASCE 7-16)
Section:	2209, 1705.12.7

Background

This policy is intended to outline the permitting and inspection requirements for steel storage racks in the City of Bellevue. Requirements are based on the height and attachment method of the storage rack. The design and anchorage of storage racks is governed by IBC Section 2209 and ASCE 7-16, 15.5.3.

The design, testing and utilization of storage racks made of cold-formed or hot-rolled steel structural members are required to be in accordance with RMI ANSI/MH 16.1 or 16.3 as modified by ASCE 7 Section 15.5.3. Storage racks are permitted to be designed in accordance with ASCE 7 Section 15.5.3.3.

General Guidelines

The following are general guidelines for permitting, review and anchorage of typical floor-mounted and floor- and wall-anchored storage racks.

1. Storage racks that are 5'-9" or less in height are not required to have a permit.
2. Free-standing storage racks between 5'-9" & 8'-0" high and floor- & wall-anchored storage racks between 5'-9" & 10'-0" high are required to have permits. These storage units are required to be anchored at each leg and along the back of wall-anchored units. Structural calculations are not required.
3. Free-standing storage racks over 8'-0" high and floor- & wall-anchored storage racks over 10'-0" high are required to have permits. Complete engineering of the storage racks and their anchorage (gravity & lateral) are required to be provided. Plans need to specify all member sizes, connections, anchorage, etc.

General Requirements (ASCE 7, 15.5.3.3.1): The Importance Factor for storage racks in structures open to the public, such as warehouse retail stores, shall be taken equal to 1.5.

Special Inspection requirement (IBC 1705.12.7): Periodic special inspection by a WABO-certified special inspection agency is required for the installation of post-installed anchors for storage racks that are 8 feet or greater in height (Seismic Design Category D).

Submittal Requirements

When permits are required, the following are required to be provided for City review:

- Drawing Sheets must include
 - Identification of the applicable building codes and design loads
 - Identification of the use of the space where the racks are proposed to be located
 - A plan-view layout of the storage racks, including dimensions of racks and aisles between racks
 - Specification of all members, connections, and anchorage, consistent with the structural calculations.
- Structural calculations for the design of the storage racks and their anchorage.
 - Calculations must consider both gravity and lateral loads.
 - Calculations and design are required to be stamped/signed by an engineer licensed in the State of Washington.
- Other
 - Identify the WABO-certified Special Inspection Agency (SIA) that will be retained to provide special inspection services. A list of WABO-certified SIA can be found at www.wabo.org.

Building Inspection Notes

- Where anchorage is installed in a post-tensioned (PT) concrete slab, special attention must be taken to avoid damaging tendons. If anchorage embedment is greater than ¾", tendons must be located by X-ray or another approved method.
- The owner is responsible for displaying in one or more conspicuous locations a permanent plaque(s) with maximum permissible unit loads.

Signature Gregg Schrader
Gregory H. Schrader, PE, SE, Building Official

Date: 05/12/2021

Attachments

Supersedes: None