



International Building Code 2000

Excerpts from the International Building Code (IBC) 2000
For Head-of-Wall Joint Systems, Vertical Shafts, and Wallbacking

702.1 Definitions.

FIRE-RESISTANT JOINT SYSTEM. An assemblage of specific materials or products that are designed, tested, and fire-resistance rated in accordance with UL 2079 to resist for a prescribed period of time the passage of fire through joints made in or between fire-resistance-rated assemblies.

JOINT. The linear opening in or between adjacent fire-resistance-rated assemblies that is designed to allow independent movement of the building in any plane caused by thermal, seismic, wind, or any other loading.

SHAFT. An enclosed space extending through one or more stories of a building, connecting vertical openings in successive floors, floors and roof.

SHAFT ENCLOSURE. The walls or construction forming the boundaries of a shaft.

FIRE-RESISTANT JOINT SYSTEMS

- 712.1 General.** Joints installed in or between in or between fire-resistance-rated walls, floor or floors/ceiling assemblies and roofs or roof/ceiling assemblies shall be protected by an approved fire-resistant joint system designed to resist the passage of fire for a time period not less than the required fire-resistance rating of the wall, floor or roof in or between which it is installed. Fire-resistant joint systems shall be tested in accordance with Section 712.3. The void created at the intersection of a floor/ceiling assembly and the an exterior curtain wall assembly shall be protected in accordance with Section 712.4.
- 712.2 Installation.** Fire-resistant joint systems shall be securely installed in or on the joint for its entire length so as not to dislodge, loosen or otherwise impair its ability to accommodate expected building movements and to resist the passage of fire and hot gases.
- 712.3 Fire test criteria.** Fire-resistant joint systems shall be tested in accordance with requirements of UL 2079. Nonsymmetrical wall joint systems shall be tested with both faces exposed to the furnace, and the assigned fire-resistance rating shall be the shortest duration obtained from the two tests. When evidence is furnished to show that the wall was tested with the least fire-resistant side exposed to the furnace, subject to acceptance of the building official, the wall need not be subjected to tests from the opposite side.

International Building Code 2000

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NOTE: The following is a synopsis of the ANSI/UL 2079 Tests for Fire Resistance of Building Joint Systems:

There are 3 components to this test standard: Pre-conditioning cycle testing, furnace testing, and the hose stream test. The excerpt is included for informational purposes. Contact Underwriters Laboratories, Inc. (847) 272-8800 for the complete test standard.

- 9.6** Each joint system is to be subjected to movement cycling prior to the fire test. The joint system is to be installed at its nominal width. The movement cycling is to consist of any one of the conditions specified in Table 9.1. A movement cycle is to consist of the joint system width being nominal, maximum, minimum and then nominal.

Table 9.1		
Conditions of test specimen cycling		
Minimum number of cycles	Minimum cycling rate (cycles per minute)	UL Class*
500	1	I
500	10	II
100	30	III

* UL Class added for reference.

Only UL Listings showing Class II and Class III meet this code.





Shaft and Vertical Exit Enclosures

- 707.1 General.** The provisions of this section shall apply to vertical shafts where such shafts are required to protect openings and penetrations through floor/ceiling and roof/ceiling assemblies.
- 707.2 Shaft enclosure required. Openings through a floor/ceiling assembly shall be protected by a shaft enclosure complying with this section.
- 707.3 Materials.** The shaft enclosure shall be of materials permitted by the building type of construction.
- 707.4 Fire-resistance rating.** Shaft enclosures including exit enclosures shall have a fire-resistance rating of not less than 2 hours where connecting four stories or more and 1 hour where connecting less than four stories. Shaft enclosures shall have a fire-resistance rating not less than the floor assembly penetrated, but need not exceed 2 hours.
- 707.5 Continuity.** Shaft enclosure walls shall extend from the top of the floor/ceiling assembly below to the underside of the floor or roof slab or deck above and shall be securely attached thereto. These wall shall be continuous through concealed spaces such as the space above a suspended ceiling. The supporting construction shall be protected to afford the required fire-resistance rating of the element supported. Hollow vertical spaces within the shaft enclosure construction wall shall be fire stopped at every floor level.
- 707.9 Joints.** *Joints in a shaft enclosure shall comply with Section 712.*

Handrail, Grab bars, Tub and Shower Seats

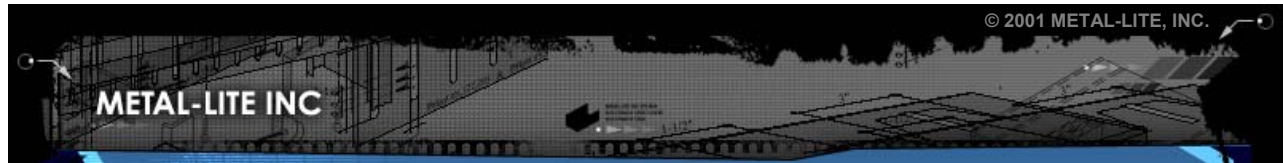
- 1607.7 Loads on handrails, guards, grab bars and vehicle barriers.** Handrails, guards, grab bars as designed in ICC A117.1, and vehicle barriers shall be designed and constructed to the structural loading conditions set forth in this section.
- 1607.7.1 Handrails and guards.** Handrail assemblies and guards shall be designed to resist a load of 50 pounds per linear foot (pounds per foot) (0.73 kN/m) applied in any direction at the top and to transfer this load through the supports to the structure.

International Building Code 2000

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- 1607.7.1.1 Concentrated load.** Handrail assemblies and guards shall be able to resist a single concentrated load of 200 pounds (0.89 kN), applied in any direction at any point along the top, and have attachment devices and supporting structure to transfer this loading to appropriate structure elements of the building.
- 1607.7.1.2 Grab bars, shower seats and dressing room bench seats.** Grab bars, shower seats and dressing room bench seat systems shall be designed to resist a single concentrated load of 250 pounds (1.1 kN) applied in any direction at any point.

REQUIREMENTS OF THE AMERICANS WITH DISABILITIES ACT (ADA) CODE

Federal register/Vol. 56, No. 144/Friday , July 26, 1991 final rule

Section 36.401 implements the new construction requirements of ADA. The act includes a failure to design and construct facilities for first occupancy later than 30 months after the date of enactment (i.e., after January 26, 1993).

Paragraph 36.401 (A) (1) restates the general requirement for accessible new construction. "Any public accommodation or other private entity responsible for design and construction must ensure that facilities conform to this requirement".

4.26 Handrails, grab bars and tub and shower seats.

4.26.3 Structural strength.

- (1) Bending stress in a grab bar or seat induced by the maximum bending moment from the application of 250 LBF shall be less than the allowable stress for the material of the grab
- (2) Shear stress induced in a grab bar or seat by the application of 250 LBF shall be less than the allowable shear stress for the material of the grab bar or seat. If the connection between the grab bar or seat and its mounting bracket or other support is considered to be fully restrained, then direct and torsional shear stresses shall be totaled for the combined shear stresses, which shall not exceed the allowable shear stress.
- (3) Shear force induced in a fastener or mounting devise from the application of 250 LBF shall be less than the allowable lateral load of either the fastener or mounting device or the supporting structure, whichever is the smaller allowable load.
- (4) Tensile force induced in a fastener by a direct tension force of 250 LBF plus the maximum moment from the application of 250 LBF shall be less than the allowable withdrawal load between the fastener and the supporting structure.

Wall reinforcement for the future installation of grab bars and handrails shall be installed around toilets, bathtubs, shower stalls and where grab bars are provided. The reinforcement shall be of sufficient length to meet the requirement of the grab bar and handrail installation specified herein. The reinforced wall shall be capable of supporting at least a 250 pound point load.

International Building Code 2000

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