ADMINISTRATIVE BULLETIN

AB-014 :

DATE : September 16, 1998 (Updated 01/01/11 for code references)

SUBJECT : Inspection

TITLE : **Dimensional Tolerances for New and Existing Construction**

PURPOSE : This bulletin details dimensional tolerances which can be accepted by field inspection personnel from the Department of Building Inspection when reviewing on-site construction work. This bulletin is the procedural implementation of the California Building Code, Section 1101B.4 and 1101B.5, Dimensional Tolerances, which amends the State code to permit jurisdictions to allow dimensional tolerances which meet industry standards. These tolerances should allow construction to proceed with dimensions as shown on the plans or in the code that are not exact but are within the standards accepted by the industry, the Department and the community.

REFERENCES : 2010 San Francisco Building Code
- Sections 1101B.4 and 1101B.5 Dimensional Tolerances
2010 San Francisco Plumbing Code
2010 San Francisco Electrical Code
The Handbook of Construction Tolerances, McGraw Hill, 1994, David Kent Ballast, editor.

DISCUSSION : The application of dimensional construction tolerances is necessary because structures cannot be built which conform precisely to code defined absolute dimensions without deviation. This bulletin defines the limits of those deviations within which administrative approval can be routinely granted. Any deviations beyond these must be addressed in the form of "unreasonable hardships" through the standard Documentation of Unreasonable Hardship process. These tolerances are based on industry standards for materials and methods of construction and are not intended to approve any incorrect dimensions or design changes. These are not code changes but approvals for variance based on as-built conditions. This applies to both new construction and the remodeling of existing structures.

One of the bases of the Department's construction tolerance standards is the 1994 Edition of the Handbook of Construction Tolerances, edited by David Kent Ballast. This is a commonly used reference book regarding industry standards for tolerances and, as excerpted below, is adopted by this bulletin as representing the standards for tolerances within the City and County of San Francisco. Please note that some adjustments and additions to these tolerances have been made inasmuch as the Handbook of Construction Tolerances does not specifically address disabled access issues. Per Section 1101B.5, all dimensions are subject to conventional industry tolerances except where the requirement is stated as a range with specific minimum and maximum end points. The Department may administratively modify and/or add to the below referenced standards as necessary to meet the intent of the codes.

Standard tolerances will be based upon the nominal manufactured dimensions of fabricated goods.

Note that the State Historical Building Code provides other remedies for variations which may be addressed through the provisions of Administrative Bulletin No. AB-013. This applies to all qualified historic properties. In cases where the State Historical Building Code is applied, that code takes precedence over the regular Building Code requirements.

The following tolerances may be used except where there is a range specified in codes or regulations related to the provision of disabled access features:

a. Concrete paving.
Standard: Plus or minus 1/4" over 10' for drives, parking surfaces, sidewalks and other site paving.
Ref. ACI117-06

b. Concrete slabs for flatness and straightness.
Standard: Bull-float slab is plus or minus 1/2" over 10'.
Ref. ACI117-06 and ASTM E1155-96

c. Cast-in-place concrete walls:
Standard: Plumb is 1/4" in 10'.
Ref. ACI117-06

d. Concrete masonry unit and masonry construction.
Standard: 1/4" in 10' vertical or horizontal
Ref. ACI117-06

e. Brick wall construction.
Standard: 1/4" in 10' vertical or horizontal
Ref. ACI117-06

f. Granite and marble installation.
Standard: 1/4" in 10' vertical or horizontal.
Ref. Dimension Stone Design Manual VII, Marble Institute of America, Inc. 2007

g. Limestone installation.
Standard: 1/4" in 10' vertical or horizontal.
Ref. Various industry standards

h. Slate tile installation for flooring or walls.
Standard: Vertical or horizontal 1/4" in 10'.

i. Wood floor framing and sub-flooring.
Standard: 1/4" in 10' horizontal tolerance.
Ref. Spectext, Section 06112, Framing and Sheathing by the Construction Sciences Research Foundation, 2006

j. Floor and wall tile.
Standard: 1/4" in 8' for wall and flooring. This does not apply to thresholds.
Ref. ANSI A108.1, A108.4, and A108.5

k. Terrazzo flooring.
Standard: 1/4" in 10'
Ref. Terrazzo Information Guide, the National Terrazzo and Mosaic Association, 1993

l. Wood flooring.
Standard: 1/4" in 10'
Ref. ANSI/HPMA LHF, 1982

m. Other stone installation.
Standard: 1/4" in 10'
Ref. Dimensions, Stone Design Manual IV, 1991

n. Cabinets and counter tops.
Standard: 1/4" in 12' out of parallel with the floor; 1/8" variation in clear width.
Ref. Quality Standards for the Professional Remodeler, Second Edition, National Association of Homebuilders, Remodelers Council, 1991

o. Flatness of counter tops.
Standard: 1/4" per 8'.
Ref. Architectural Woodwork Quality Standards, Architectural Woodwork Institute, 1993

p. Storefront installation.
Standard: Storefront systems to be vertical plus or minus 1/8" in 12';
Ref. Aluminum Storefront and Entrance Manual, American Architectural Manufacturers Association, 1987

q. Framing for gypsum wallboard.
Standard: 1/8" in 10' vertical and horizontal.
Ref. GA-216

r. Wallboard partitions, ceilings, and trim.
Standard: 1/4" in 10'
Ref. ANSI A108.11, and GA-216

s. Installation of lath and plaster.
Standard: 1/4" per 10'
Ref. ASTM C926

t. Clear opening at doors.
Standard: plus or minus 3/8"
Ref. None.

u. Plumbing fixture installation
Standard: plus or minus 1/2" measured from the finished wall or floor.
Ref. None

v. Handrail dimensions.
Nominal handrails not to vary more than 3/16" in diameter from code dimension; height plus or minus 3/16" measured from finished floor.
Ref. None.

w. Threshold.
Standard: 1/8" variation in threshold height is permitted above the finished floor surface.
Ref. None

x. Knee clearance under wall mounted plumbing fixtures, including lavatories, drinking fountains, urinals and toilets.
Standard: Mounting height above finished floor equals plus or minus 3/8". Within a 30" wide area, centered on the accessible basin or fixture, there may be a variation of 1/4" in height between the lower edge of the counter and the finished floor.
Ref. None

y. Switches, receptacles, pull stations, controls and similar devices.
Standard: Plus or minus 1/2" vertically.
Ref. None

z. Door operating pressure.
Standard: Plus or minus 1/2 pound.
Ref. None

aa. Operating pressures for faucets, flush valves and miscellaneous hardware.
Standard: Plus or minus 1/2 pound.
Ref. None

bb. Other elements. Other constructed elements which are not specifically regulated shall be permitted to have a construction tolerance of 1/4" plus or minus unless, in the opinion of the district inspector, such variation impedes access, except that grab bars and handrails shall be not more than the maximum horizontal distance from the adjoining wall surface than is permitted by the regular code.

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Vivian L. Day, C.B.O. Date
Director
Department of Building Inspection

Approved by the Building Inspection Commission on September 16, 1998