

**REASONABLE CONSTRUCTION TOLERANCES  
FOR  
DISABLED ACCESS CONSTRUCTION**

**by**

**Orange Empire Chapter of ICBO**

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For Review by Orange Empire Chapter, ICBO.

## **Background**

Design, review, construction and inspection of buildings with accessibility for the disabled in mind has always been challenging. It is incumbent upon building officials and their staff to enforce “minimum” standards. The designs characteristically call out exact measurements, which are also the minimum allowed, creating an inherent flaw due to construction tolerances.

New construction sometimes produces a condition that falls short of some minimum requirement by a minor tolerance which is consistent with standard construction practices. Some tolerances are more critical than others while some inadequacies are more costly to correct than others. Regulatory officials must routinely decide how tight of a margin they should adhere to in a wide variety of circumstances when either approving or requiring corrective measures on new construction.

## **Administrative Application**

The purpose of this document is to combine the thoughts and practices of regulatory officials as applied in the field of accessible building design and to document what is believed to be standard industry practice. Therefore, this document is intended to be used as a tool for establishing an enforcement tolerance level. Plans shall always indicate compliance. Acceptance of reasonable tolerances is only to be considered for field construction.

The following construction tolerances have not been approved or endorsed as code compliant by any state or federal enforcing agency. These tolerances are intended to make access codes more user friendly and to ensure that a building department does not grant an exception to the code which would reduce or limit accessibility for people with disabilities.

Both Title 24 California Code of Regulations (T-24 CCR) and the Americans with Disabilities Act Accessible Guidelines (ADAAG) permit deviations from stated dimensions based on field conditions. This authority to establish and enforce regulations based on reasonable tolerances is listed as follows:

**Health & Safety Code 19957. Exceptions from literal requirements of standards and specifications in hardship, etc., cases.** In cases of practical difficulty, unnecessary hardship, or extreme differences, a building department responsible for the enforcement of this part may grant exceptions from the literal requirements of the standards and specifications required by this part or permit the use of other methods or materials, but only when it is clearly evident that equivalent facilitation and protection are thereby secured.

Added by Stats 1969 ch 1560'1, operative July 1, 1970.

**Title 24 CCR - Section 1101B.4 Dimensional Tolerances.** All dimensions are subject to conventional building industry tolerances for field conditions.

**ADAAG – Section 3.2 Dimensional Tolerances.** All dimensions are subject to conventional building industry tolerances for field conditions.

Neither T-24 CCR or ADAAG define “conventional building industry tolerances.” Part II of T24 CCR, Section 104.2.1 prescribes the following: “The building official shall have the power to render interpretations of this code and to adopt and enforce rules and supplemental regulations to clarify the application of its provisions.” Therefore, the building official is responsible for interpreting what

“conventional building industry tolerances” are acceptable. This document can be adopted by building officials to clarify how their jurisdictions interpret these provisions.

The context of this guideline, where tolerance levels by which a feature falls short of code compliance, is not to imply that such a condition complies but to help code official determine when to make corrective measures mandatory. If a feature is found to be accessible but lacking compliance by a minor degree it is up to the local building official to establish enforcement policy. This policy is only intended to address Title 24 Regulations and not those outside the local building officials scope of authority.

If an official subscribes to the proposed standards, it should be noted that in no case should a less than code complying condition be accepted where safety is an issue. Following these standards is intended to allow a project to be constructed (not designed) within reasonable tolerances and not be redone at considerable expense when the benefit is not commensurate with the cost. It does not mean that the developer may not at some time in the future be made to correct the condition if a non-conforming situation precludes accessibility to an aggrieved individual.

It is perceived that the standards would only be utilized if a physical material has been completed such as placed concrete or a framed and finished wall. If a code violation is noted at forming or framing stage respectively, the developer should be made to comply since it is practicable for them to do so.

Consideration when applying reasonable construction practices enforcement should be 1) safety, 2) cost versus access achieved and 3) type of occupancy.

This standard is intended to be a “living document” which can be updated, expanded or terminated whenever it is shown to be appropriate in order to best serve the public-at-large. It is believed that addressing reasonable construction tolerances will best serve the interests of the disabled community since the often harsh enforcement will be mitigated thus encouraging goodwill. It will also be well received by the majority of developers who want to comply but often incur excessive costs when forced to comply with minor tolerances.

### **Recommended Tolerances:**

#### **1) Parking Lot.**

- a. Slope of accessible parking stall and unloading/access aisle surface is 2% maximum for new Construction. §1129B.4.4

**Exception:** Surface slopes up to 4%.

#### **2) Sidewalk.**

- a. Sidewalk/Walks requires a 2% maximum cross fall for new construction. §1023.1.3, 1133B.7.3

**Exception:** A 3% maximum cross slope or a 4% maximum cross slope for up to 30'.

- b. A 48" minimum width. §1133B.7.1 & 1133B.7.1.3 Exception

**Exception:** A 46 1/2" minimum width or if natural or existing condition creates hardship, then 36" minimum wide.

#### **3) Walk.**

- a. Sidewalk/Walks requires a 2% maximum cross fall for new construction. §1133B.7.1.3

**Exception:** A 3% maximum cross slope or 4% maximum cross slope for up to 30'.

- b. Minimum width is 48". §1133B.7.1 & 1133B.7.1.3 Exception

**Exception:** A  $\geq 46 \frac{1}{2}$ " width or if natural or existing condition creates hardship, then 36" minimum wide.

- c. Continuous handrails on both sides if ramp slope exceeds 1:20 (5%). § 1133B.5.5

**Proposed Exceptions:**

1. Handrails not required on walks in parks and wilderness situations unless they are adjacent to and serve a building or facility such as restrooms, a ball field with bleachers or theater, etc.
2. Provide handrails when there is a drop off or excessive cross slope that creates a hazardous condition.
3. Permit up to a 6.66% slope without handrails unless it is a hazardous condition.

**4) Curbscuts.**

- a. A 1:12 (8.33%) maximum slope in direction of travel. ADAAG 4.7 requires least possible slope not to exceed 1:12. §1127B.5.3

**Exception:** An 8.4% maximum average slope checked at quarter points with a 9.5% maximum slope at any one point.

- b. A 1:10 (10%) maximum side flare slope or a 1:12 (8.33%) maximum side flare slope if there's pedestrian cross traffic. §1127B.5.3

**Exception:** A maximum 1:8 slope (12.5%) if there is no pedestrian cross slope and a 36" minimum level landing at the top.

- c. A 48" deep level top landing (2 % maximum slope) or a 1:12 maximum side flare slope. §1127B.5.4

**Exception:** A 4% maximum slope.

- d. A  $\frac{1}{2}$ " lip at bottom of a curbcut/ramp beveled at 45°. **ADAAG 4.7.2 prohibits a  $\frac{1}{2}$ " high lip at the bottom of curbcut/ramp).** §1127B.5.5

**Exception:** No  $\frac{1}{2}$ " high lip at the bottom of curbcut unless local enforcing agency requires it. ADAAG prohibits it and all national associations representing people with visual disabilities state that it does not provide any additional safety. .

- e. A contrasting finish to adjacent surface. §1127B.5.6

**Exception:** Most code enforcement agencies state that a hard broom finish meets this criteria.

- f. A 48" deep bottom landing with a  $\leq 5\%$  slope or up to a 2% if mid-block curbcut. §1127B.5.3

**Exception:** A bottom landing with up to a 6% slope for a standard curbcut/ramp.

- g. Level landing. A level landing 4 feet (1219 mm) deep shall be provided at the upper end of each curb ramp over its full width to permit safe egress from the ramp surface, or the slope of the fanned or flared sides of the curb ramp shall not exceed 1 unit vertical to 12 units horizontal (8.33% slope). 1127B.5.4.

**Interpretation:** This section does not permit a curbcut without a 48" or 36" deep level top landing to cross a sidewalk and create a cross slope in the sidewalk exceeding 2% or up to 4% for 30'.

**5) Pedestrian Ramps.**

- a. Pedestrian ramps are required to be the least possible slope, not to exceed 8.33% slope. § 1133B.5.3

**Exception:** An 8.4% maximum average slope when checked at quarter points with a 9.5% maximum slope at only one point.

- b. Continuous handrails on both sides, installed 34" to 38" above ramp surface. §1003.3.4.5, 1133B.5.5.1

**Exception:** None - Handrails installed 34" to 38" high.

- c. Handrails extend 12" minimum parallel to floor past top and bottom landings. § 1133B.4.2.2.  
**Exception:** Measured to end of handrail extension. Handrail extensions may turn 90 degrees at the top or bottom of the ramp.
- d. A 1-1/4" - 2" diameter handrail, and if adjacent wall or other surface be free of sharp or abrasive elements and smooth gripping surface without sharp corners. § 1133B.5.5.1.  
**Exception:** None – (1-1/4" to 2" exterior diameter)
- e. A 1-1/2" space minimum between the wall and handrail. § 1133B.5.5.1.  
**Exception:** 1-1/4" to 1-3/4" minimum clearance between wall and handrail.

## 6) Restrooms.

### General:

- a. A 5' minimum radius clearance with 12" maximum door swing intrusion in restrooms for new construction. §1115B.7.1.1  
**Exception:** A ≥36" x 60" space outside the door swing into restrooms.

### Waterclosets:

- b. Water closets require an 18" clearance to centerline for new construction. § 1115B.7.1.3, 1503B  
**Exception:** A 17" - 19" clear space to centerline.
- c. Water closets requires a 36" wide by 48" long clear space in front of toilet for new construction. §1115B.7.2.  
**Exception:** A 46" minimum space in front of a water closet for a front entry stall if there's a 32" minimum space beside the watercloset OR 58" minimum in front of a toilet in front of a side entry stall.
- d. New construction requires a 32" minimum space beside water closet.  
**Exception:** A 31" minimum clearance beside the fixture to a wall.

### Lavatories:

- e. All lavatories are required to comply. §1115 B.9.1/ 1504(b)  
**Exception:** For new construction require 50% of the lavatories to comply with a minimum of one complying lavatory per restroom.  
**Existing Condition:** require one lavatory to comply or two if there are six or more lavatories.
- f. Lavatories require a 29" minimum high X 30" minimum wide knee space, 29" minimum high extending 8" minimum under the lavatory, with a 30" minimum wide, 9" minimum high by 17" minimum deep toe space. §1504  
**Exception:** A 28" minimum high X 30" minimum wide knee space at front of lavatory, with a 27" minimum high space extending 8" minimum under the lavatory (Accept a 3" maximum wide water over flow protrusion at 26" minimum high), with a 30" minimum wide, 9" minimum high by 17" minimum deep toe space. §1504

### Urinals:

- g. Urinals are mounted 17" maximum high for new construction. §1503B  
**Exception:** An 18" maximum high lip.
- h. Code requires a urinal to extend 14" minimum off the wall.  
**Exception:** Extends 12" minimum off the wall.
- i. Code requires urinal flush handle to be 44" maximum high.

**Proposed Exception:** Up to 48" maximum high. This is within the allowable reach ranges.

**Accessories:**

- j. Highest operable part of dispensers is 40" maximum AFF and located in area accessible to a person using a wheelchair. §1115B.9.2

**Exception:** A 42" maximum high product slot with a 48" maximum high operating handle.

- k. Install all mirrors 40" AFF maximum to the bottom edge of the reflective portion of the mirror. §1115B.9.1.2

**Exception:** Install a minimum of one mirror at 42" maximum high to accommodate a person using the accessible lavatory.

**7) Doorways.**

- a. A 12" minimum strike side door clearances (push side if door has latch and closure), 18" minimum (strike edge clearance on pull side of interior doors) and 24" minimum (strike edge clearance on pull side of exterior doors) for new construction. §1133B.2.4.3

**Exception:** A 6" minimum clear space on push side if latch and closure, 17" minimum clear space on pull side, and 23" minimum for exterior doors.

- b. Entry doors and interior passage doors require a 60" minimum level landing in direction of door swing for new construction. §1133B.2.4.2.

- c. **Exception:** A 54" minimum clear level landing with a 3.5% maximum slope.

**Existing Condition:** 44" long space in front of the door and 60" or more at strike edge of door and extending 12" across the face of the door.

- c. A ¼" maximum vertical high threshold or up to ½" if beveled 1:2 maximum. §1133B.2.4.1

**Exception:** Up to ¾" high if beveled 1:2 maximum.

- d. Title 24 requires a 5 lb. maximum effort to open interior doors, 8.5 lbs maximum to open exterior doors and 15 lbs maximum pull for fire rated exit doors. §1133B.2.5.

**Exception:** A 6 lb. maximum effort to open interior doors, 9 lbs maximum pull for exterior doors and 15 lbs maximum for fire rated exit doors.

**8) Stair Handrails.**

- a. Continuous handrails on both sides, installed 34" to 38" above tread nosing. § 1133B.4.2.1.

**Existing Condition:** Continuous handrails installed 32" to 38" high on both sides of the stairs.

- b. Handrails extend 12" minimum parallel to floor past top landing, slope a tread width past bottom tread with an additional 12" minimum extending parallel to the floor (23" minimum extensions) measured to inside of curve on handrails. § 1133B.4.2.2

**Exception:** Handrail may turn 90 degrees at the top or bottom of the stairs if they extend into a pedestrian path of travel or create a hazardous condition.

- c. A 1-1/4" - 2" diameter, and if adjacent wall or other surface be free of sharp or abrasive elements and smooth gripping surface without sharp corners. § 1133B.4.2.6.1.

**Exception:** None – (1 ¼" to 2" exterior diameter)

- d. A 1 ½" space between the wall and handrail. §1006.9.2.5, 1133B.4.2.5

**Exception.** A 1-1/4" to 1-3/4" clearance between wall and handrail.

**9) Counter Heights.**

Counter heights are required to be 28" - 34" maximum high for new construction. §1122B.4

**Exception:** A 35" maximum high counter.

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