GENERAL

The purpose of this guide is to clarify the minimum building code requirements when constructing an interior or exterior stairway in a one or two family dwelling.

The information provided in this document is general and intended as a guide only. Each project is unique and additional requirements may be enforced as deemed appropriate.

STAIR HANDRAILS IN RESIDENTIAL 1 AND 2 FAMILY DWELLINGS

Interior and exterior stairways are required to comply with the requirements of the California Residential Code.

RISE AND RUN PER STEP

1. Maximum rise (height) per step is 7 ¾ inches.
2. Minimum run (depth) per step is 10 inches.
3. Minimum tread depth is 10 inches.
4. A nosing is required on stairways with solid risers, except where the tread depth is less than 11 inches. The nosing shall be between ¾ inch and 1 ¼ inches.
5. Avoid variations in tread depth and riser height. 3/8 inch is the maximum variation allowed between the highest and lowest risers, and / or between the shallowest and deepest treads in a stair run.

STAIRWAY RUN AND LANDINGS

1. Maximum rise of a stairway between floors or landings is 12 feet.
2. A floor or landing is required at the top and bottom of each stairway. A landing is not required at the top of a stairway that has a door installed, provided the door does not swing over the stairway.
3. Minimum size of any landing is 36 inches by 36 inches.
4. The minimum width of a landing is the width of the stairway it serves.
5. The minimum length of a landing is 36 inches for stairways with straight runs.
6. For other than square or rectangular landing shapes, refer to R311.7.6.

CLEAR HEIGHT AND WIDTH

1. Minimum clear headroom above a stairway is 80 inches. The measurement is taken vertically from the front edge of the tread (nosing) to the ceiling.
2. The minimum clear width at stairways above the handrail(s) is 36 inches. The clear width is required at any point between the top of the handrail and the required minimum headroom (80").
3. The maximum distance a handrail can project into the stairway is 4 ½ inches.
4. The minimum clear width at and below a handrail installed on only one side of a stairway is 31 ½ inches.

5. The minimum clear width at and below handrails installed on both sides of a stairway is 27 inches.

GUARDS

1. Minimum guard height on the open sides of interior stairs is 34 inches.

2. Where the top of the guard on open sides of interior stairs also serves as a handrail, the top of the guard is required to be 34 inches minimum to 38 inches maximum.

3. Minimum guard height on the open sides of interior and exterior stair landings where the walking surface is more than 30 inches above the adjacent floor or grade is 42 inches.

4. At exterior stair landings the measurement is taken from a point 36 inches horizontally from the edge of the landing walking surface to the grade.

5. Minimum guard height on exterior stair landings

6. Guards on the open sides of interior stairways shall have no openings that allow the passage of a 4 3/8” sphere.

7. Triangular openings at stair tread / riser and the bottom of the guard shall have no openings that allow the passage of a 6” sphere.

8. Clear space at open risers shall not allow the passage of a 4” sphere.

HANDRAIL INSTALLATION

1. Handrails are required on at least one side of each flight or continuous run of a stairway.

2. Handrails are required where there are 4 or more risers (3 treads). Handrails are not required on stairs with 3 or fewer risers (2 treads)

3. Minimum height of handrails is 34 inches.

4. Maximum height of handrails is 38 inches.

5. The measurement is taken vertically from the face (nosing) of the tread to the top of the handrail.

6. Handrails are required to be continuous on each flight or run of a stairway.

7. Handrails are required to extend from a point directly above the top riser to a point directly above the bottom riser.

8. Handrails are required to return to the wall at the top and bottom of the stairway, except where there is a volute or turnout at the bottom riser.

9. Newel posts are permitted where there is a turn in the stairway

10. Bendings or fittings used to provide for continuous transitions are permitted to exceed the maximum height.

11. Handrails are not required at landings.

HANDRAIL TYPES AND PROFILES
1. Type I handrails are permitted:
   a. Circular shaped with an outside diameter of 1¼ inches minimum to 2 inches maximum.
   b. Other shapes with a perimeter dimension of 4 inches minimum to 6¼ inches maximum, with a cross section of 2¼ inches maximum.
   c. All edges shall have a minimum radius of 0.01 (1/100) inches.

2. Type II handrails are permitted:
   a. Shapes with a perimeter dimension greater than 6¼ inches that have a graspable finger recess area on both sides of the profile.

**WALKLINE AND WINDER TREADS**

1. The walkline refers to a curved line that is 12 inches from the narrowest part of the winding tread that follows the turn.

2. Winder treads are required to be:
   a. Minimum 10 inches tread depth at the walkline.
   b. Minimum 6 inches tread depth at any point in the stairway clear width.
   c. Consistently shaped winder treads at the walkline are permitted within the same stair run as rectangular treads.
   d. The winder tread depths and the rectangular tread depths do not have to be within 3/8 inch of each other.
   e. Avoid variations in winder tread depth at the walkline. 3/8 inch is the maximum variation allowed between the shallowest and deepest winder treads along the walkline.
   f. All risers, at both winder steps and rectangular steps in the same stair run, shall have no height variations greater than 3/8 inch.

**FIRE PROTECTION**

1. Provide one-hour fire resistive construction on walls & ceiling under the interior of stairway
Figure R311.7.1
STAIRWAY CLEARANCES

Figure R311.7.2(1)
MINIMUM HEADROOM

1 inch = 25.4 mm, 1 foot = 304.8 mm.
Figure R311.7.5.3
TREAD PROFILE
Figure R311.7.5.1(1)
CONVENTIONAL STAIRWAY

Figure R311.7.5.2.1(1)
WINDERS

1 inch = 25.4 mm.
1 inch = 25.4 mm, 1 foot = 304.8 mm.

Figure R311.7.6(1)
LANDINGS AT DOORS

SPACE REQUIRED TO SAFELY TURN A STAIRWAY AT CONNECTING FLOORS IS REGULATED BY DEPTH AT THE WALKLINE AND AREA

Figure R311.7.6(2)
EXAMPLE OF LANDING OF SHAPES OTHER THAN SQUARE OR RECTANGULAR
CIRCULAR HANDRAIL

1 inch = 25.4 mm.

Figure R311.7.8.3(1)
TYPE I HANDRAIL

HANDRAIL PERIMETER > 61/4 IN.

GRASPABLE FINGER RECESS AREA IS REQUIRED ON BOTH SIDES

For SI: 1 inch = 25.4 mm.

Figure R311.7.8.3(2)
TYPE II HANDRAIL
Figure R311.7.8.2
HANDRAILS

Figure R311.7.10.1
SPIRAL STAIRS

1 inch = 25.4 mm.
Figure R312.1.2(1)
STAIRWAY GUARD

Figure R312.1.2(2)
STAIRWAY GUARD
Figure R312.1.3
GUARD REQUIREMENTS

Figure 718.2.4
FIREBLOCKING—STAIRS

1 inch = 25.4 mm.