

- 3) The minimum headroom in a staircase is 6'-8" measured from the nose of the stairs to the lowest ceiling / projection.
- 4) Stair risers shall be closed / solid. Exception for stair not part of an egress path may have open risers provided that the space cannot allow a 4" sphere to pass through.
- 5) Stair tread shall be a minimum 3/4".
- 6) Tread projection shall not exceed 1-1/4" beyond the riser, this includes the leading edge at the top of the stairs
- 7) Stair riser or tread shall not exceed 3/8" over the entire run of the staircase. A stair run shall stop at landings or the floor level.

Landings

- 1) Landings are required every 12' of staircase height.
- 2) A landing is not required in Single Family or Duplex at the top of an interior flight of stairs, including stairs in an enclosed garage, provided the door does not swing over the staircase.
- 3) Minimum 48" x 48" Dimension.

Spiral Staircases, Winder Stairs, Circular Stairs, Curved Stairs

**See Building Division for more
detailed requirements.**



Stairs, Handrail & Guardrail Requirements

City of Millbrae

**Community Development
Department
Building Division**

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12/30/05, 1/7/08

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What is the difference between a handrail and a guard rail?

A guardrail is the barrier that prevents you from falling off a deck, porch, mezzanine, or the side of stairs.

A handrail is the railing that runs the length of a staircase so that you can hold onto or pull against to go up or down the stairs.

When do I need a handrail?

You need a handrail for any staircase of four or more steps.

When do I need a guardrail?

You need a guard rail if the platform that you are standing on is more than 30" above the ground or floor.

Around roof openings, unenclosed floor openings, open and glazed sides of staircases, aisles, landings and ramps, balconies, or porches

What are the specifications for a handrail?

- 1) The handrail must be between 34" and 38" above the front edge of the stair (nosing).
- 2) The hand rail must extend 12" past the top and bottom of a staircase in

all areas where the public will walk, in all commercial buildings and walks.

Exception private stairways do not need the handrail extensions.

- 3) Railing must be a minimum 1-1/4" to 2" in diameter. All other types or shapes of handrails must be pre-approved by the Building Official.
- 4) The ends of the railings must return to a wall or post or return to the ground / sidewalk.
- 5) When handrails project from walls or posts there shall be a minimum 1-1/2" space between the wall / post and the handrail.
- 6) Handrails shall not have sharp edges.

7) Handrails are required on both sides of staircase and an intermediate rail for each portion of the staircase that is 88" or more in width.

Exception is private staircases where one handrail is allowed.

8) Handrails shall be continuous the entire length of the staircase.

What are the specifications for a guardrail?

1) Guardrails shall be a minimum 42" In all building types including residential. Exception if the guardrail is part of the handrail then it may be from 34" to 36" for that portion that is on the staircase.

2) No space between pickets may allow a 4" sphere to pass through. This is measured vertical or horizontally.

3) Staircases that are open on one or more sides shall have guardrails on the open sides.

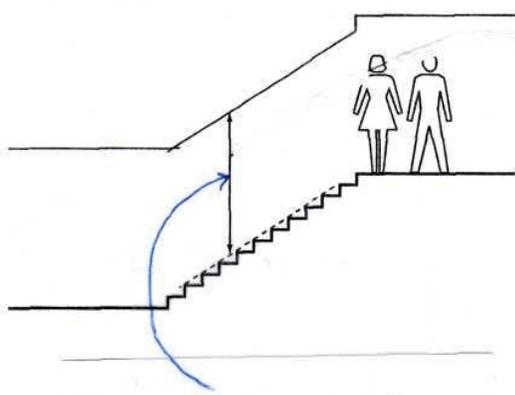
Stairways

1) The minimum width of a stairway shall be 44" for occupant loads of 50 or more. For less than 50 it may be 36".

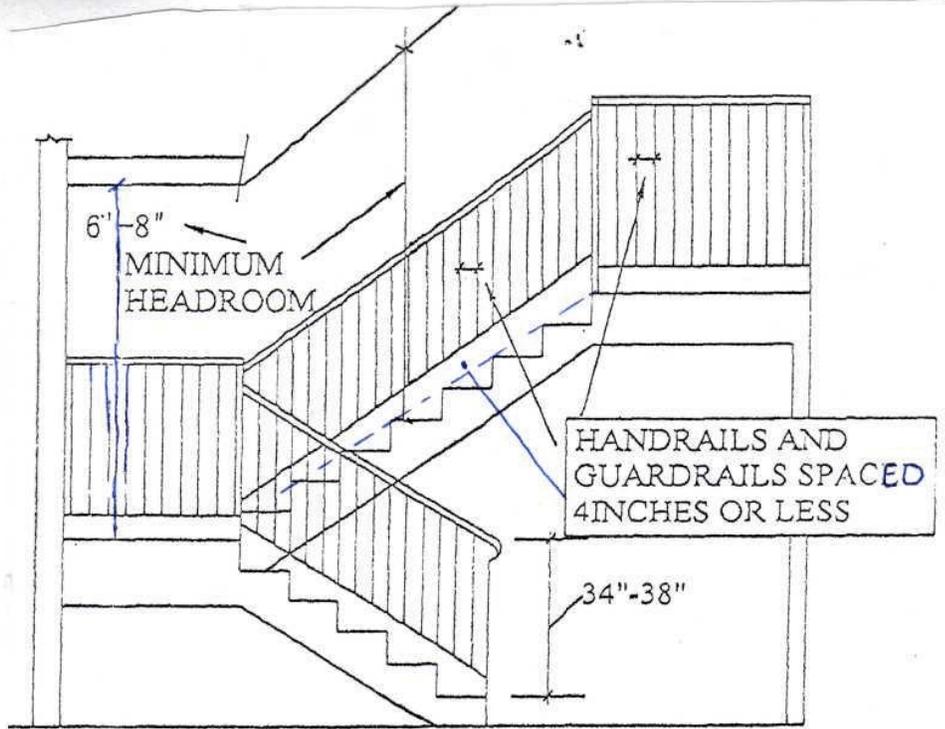
Residential may be 36" minimum in width.

2) Minimum tread and riser size shall be 7" maximum and 4" minimum riser height and 11" tread width minimum.

Exception for single family and duplex- the rise is 7 3/4" maximum and 4" minimum riser height and 10" tread width minimum.



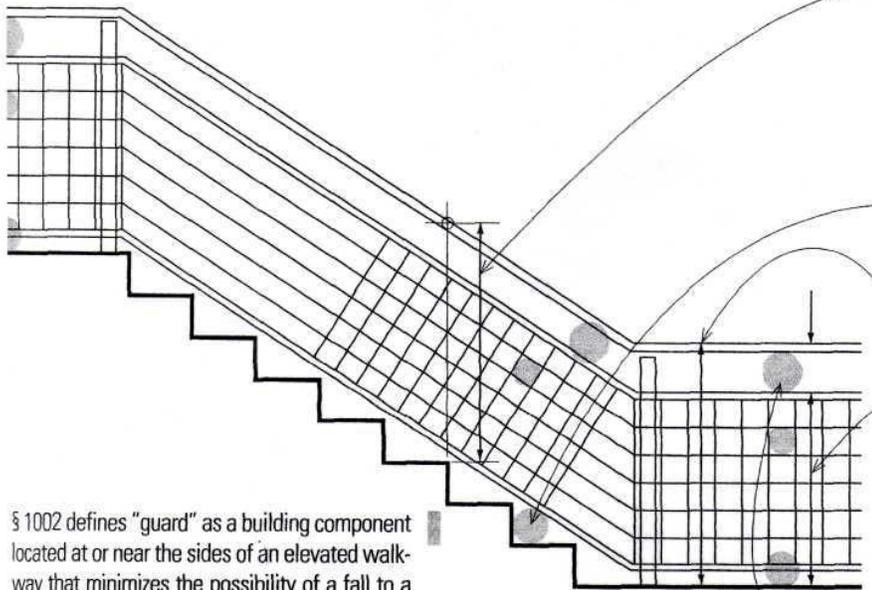
§ 1009.2. Stairs must have at least 80" (2032) of headroom at any point.



Guards

§ 1013 requires that railings or similar protective elements be provided where any grade change of 30" (762) or more occurs in a means of egress. This also applies when a means of egress is adjacent to glazing elements that do not comply with the strength requirements for railings and guards per § 1607.7.

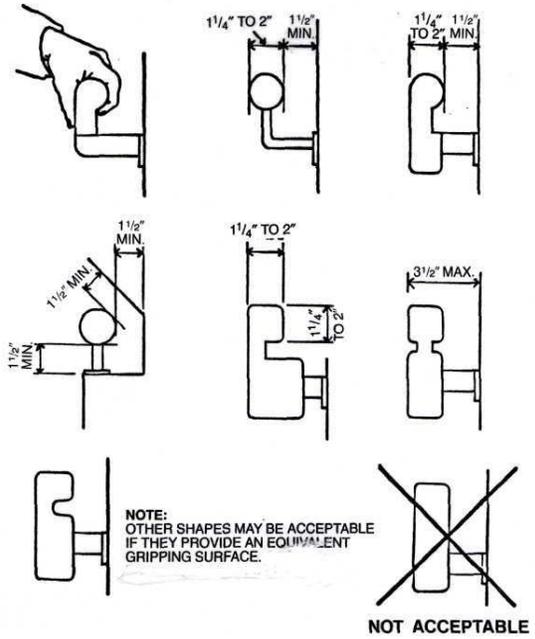
STAIR WELL HEADROOM



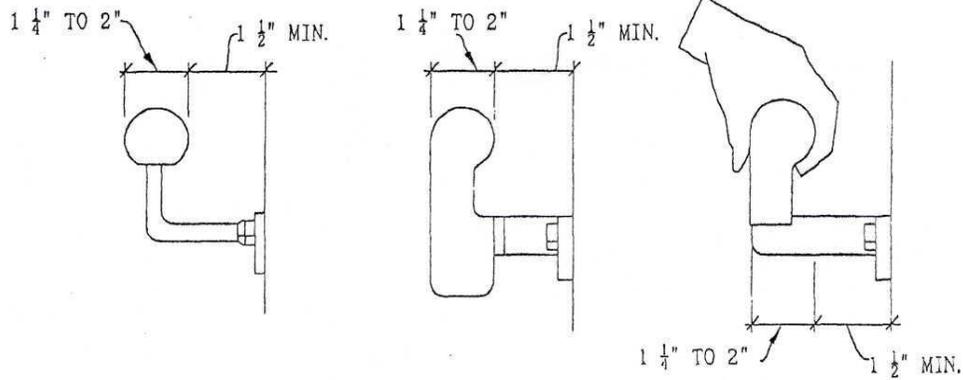
§ 1002 defines "guard" as a building component located at or near the sides of an elevated walkway that minimizes the possibility of a fall to a lower level. The intent of these requirements is that any building occupant moving through the means of egress will be protected from falling from the edges of the means of egress. Such guards are not required when they would impede the intended use of parts of occupancies, such as in areas where the audience is viewing a stage, or at service pits and loading docks.

- Height of guards is measured from the leading edge of treads on a stairway.
- Guards are typically 42" (1067) high except in residences, where they may range from 34" to 38" (864 to 965) in height when located along the side(s) of an open stair and also serve as a handrail.
- The triangular space between the tread, riser and rail may allow a sphere no more than 4" (102) in diameter to pass.
- 42" (1067) high minimum above walking surfaces
- Guards are to be designed with a pattern from the floor up to 34" (864) such that a sphere 4" (102) in diameter cannot pass through. [Openings in R-2 and R-3 sleeping units may allow passage of a 4.375" (111) sphere.]
- From a height from 34" to 42" (864 to 1067), the pattern may be more open, allowing a sphere up to 4" (102) in diameter to pass.
- In industrial occupancies where public access does not occur, railings may have spacing up to 21" (533). Such guards must be provided at rooftop mechanical equipment or roof access openings located closer than 10' (3048) from the roof edge.

- Handrails are to be graspable, with a minimum diameter of 1 1/4" (32) and a maximum diameter of 2" (51).
- Other shapes of equivalent graspability are acceptable. Note that the definition of graspability is subject to interpretation by the building official.
- Railings that do not have a circular profile shall have a perimeter dimension of at least 4" (102) but no greater than 6 1/4" (159) and a maximum cross-section dimension of 2 1/4" (57).
- Handrails require a minimum clearance from the wall of 1 1/2" (38) to allow for grasping.
- There are to be no sharp or abrasive elements to interfere with the ability of the stair user to grasp the handrail. Edges must have a minimum radius of 0.125" (3.2 mm).
- Projections, such as stringers and baseboards, are allowed at each handrail, but they cannot project more than a total of 4 1/2" (114) into the required width of the stairway.



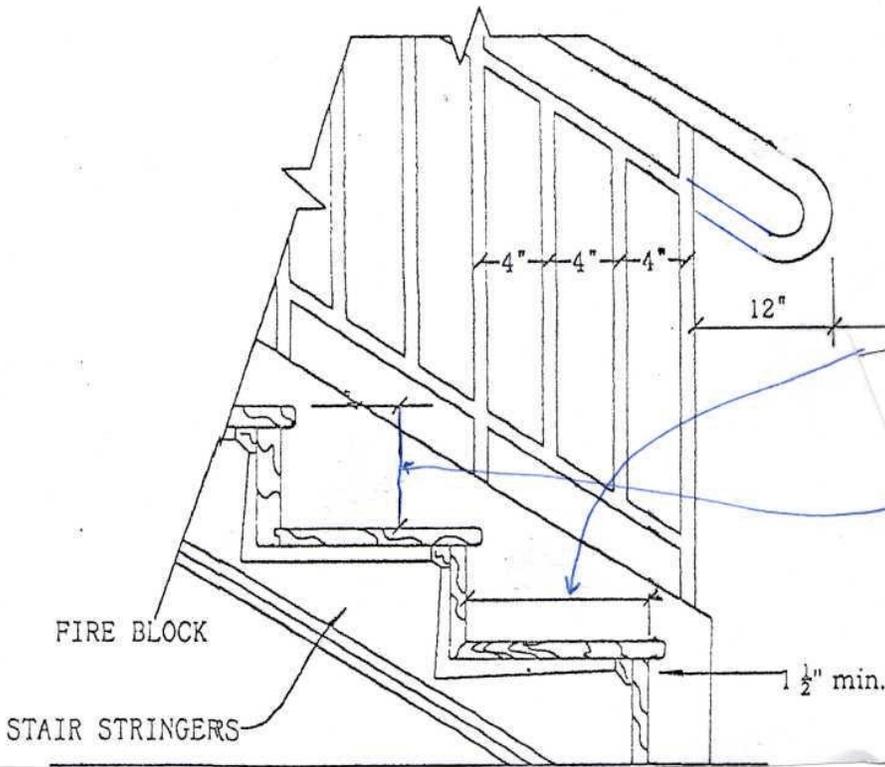
ACCEPTABLE SHAPES AND INSTALLATIONS—HANDRAIL



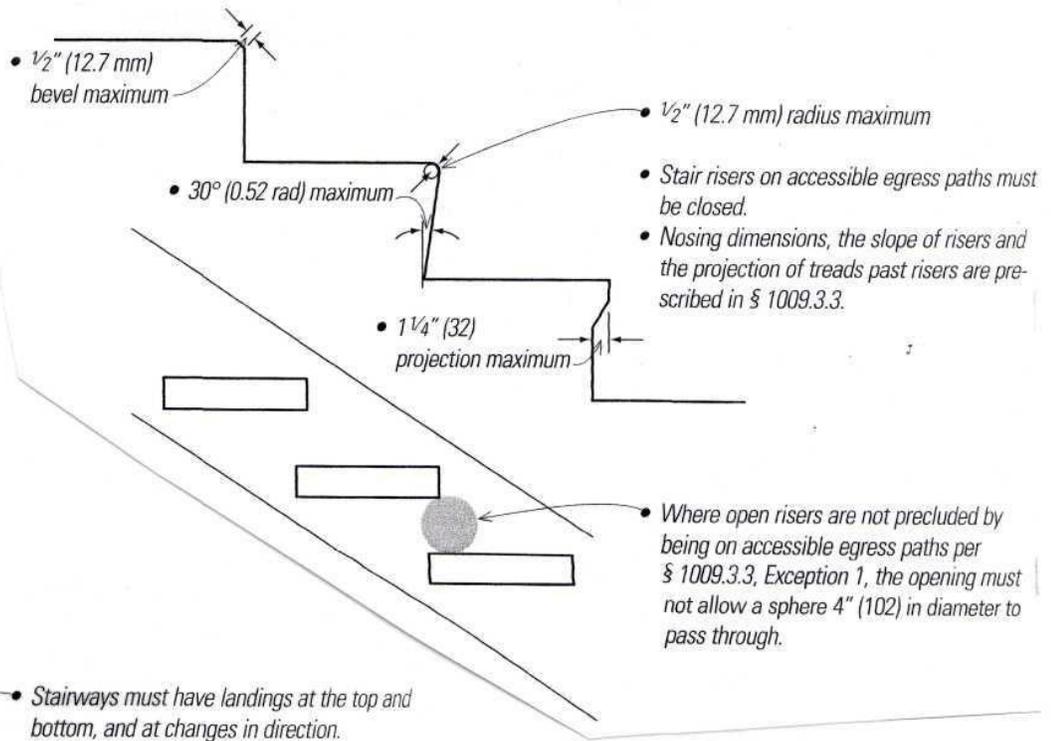
HANDRAILS

STAIR DETAIL

NO SCALE

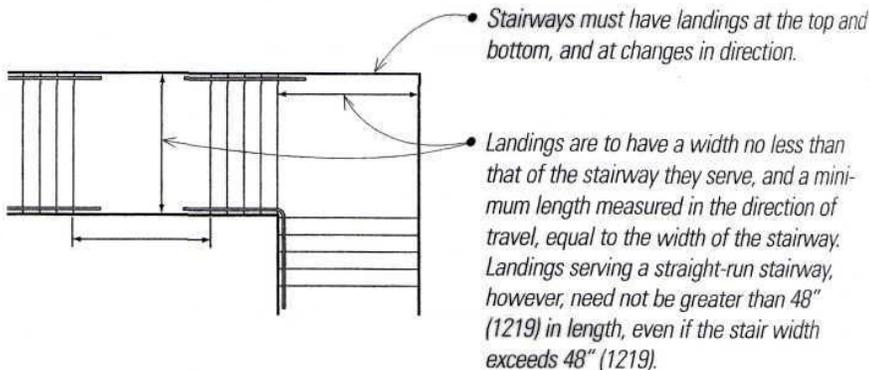


- § 1009.3. Stair treads shall have a minimum depth of 11" (279).
- Stair risers shall have a minimum height of 4" (102) and a maximum height of 7" (178).
- The primary exception to rise and run requirements occurs in residential and utility uses where risers may have a maximum height of 7 3/4" (197) and treads may have a minimum length of 10" (254).
- § 1009.3.2. Treads and risers are to be essentially uniform in dimension with a tolerance of 0.375" (9.5 mm) plus or minus between the smallest and largest within any flight.



- Walking surfaces of stairways are to be stable and slip-resistant.
- Exterior stairs must be designed to avoid water accumulation.
- Any single flight of stairs may not exceed 12' (3658) in vertical rise between floors or landings. Where stairs have a rise greater than 12' (3658), then intermediate landings are required.

- 1/2" (12.7 mm) radius maximum
- Stair risers on accessible egress paths must be closed.
- Nosing dimensions, the slope of risers and the projection of treads past risers are prescribed in § 1009.3.3.
- Where open risers are not precluded by being on accessible egress paths per § 1009.3.3, Exception 1, the opening must not allow a sphere 4" (102) in diameter to pass through.



- Stairways must have landings at the top and bottom, and at changes in direction.
- Landings are to have a width no less than that of the stairway they serve, and a minimum length measured in the direction of travel, equal to the width of the stairway. Landings serving a straight-run stairway, however, need not be greater than 48" (1219) in length, even if the stair width exceeds 48" (1219).