



# OPEN DECKS

**Reference:** 2018 International Residential Building Code  
City of Marion Building, Section 160.03, 160.19 to 160.21

## Permit requirements:

- A building permit is required when a deck or platform is more than 30 inches above adjacent grade.
- A building permit is required regardless of height from grade when the deck includes a roof or trellis. (Suggestion: if you ever anticipate enclosing the deck as a screened-in porch or a 4 season porch, we suggest you design the deck and footings for the increased loads and purchase a permit for your deck and ask for the required inspections.)
- All decks are to be located per the zoning guidelines listed below.

**Zoning guidelines: Planning & Zoning Dept.** Phone –743-6320. Fax –373-4260.

- Decks attached to the primary structure (home) cannot be constructed in the required side yard or required rear yard.
- An unenclosed deck may encroach into the required front yard setback for a distance not to exceed five feet.

**Applying for a permit:** (Submit 2 sets of building plans for review and approval)

- Complete the “*Sample Site Plan*” showing all required information.
- Fill out the applicable information on the “*Open Deck Construction*” form or submit detailed, scaled plans.
- Present the completed forms or plans to the Building Department located at 1225 6<sup>th</sup> Avenue. for review.
- Upon completion of the review, you will be notified by phone to secure your permit.

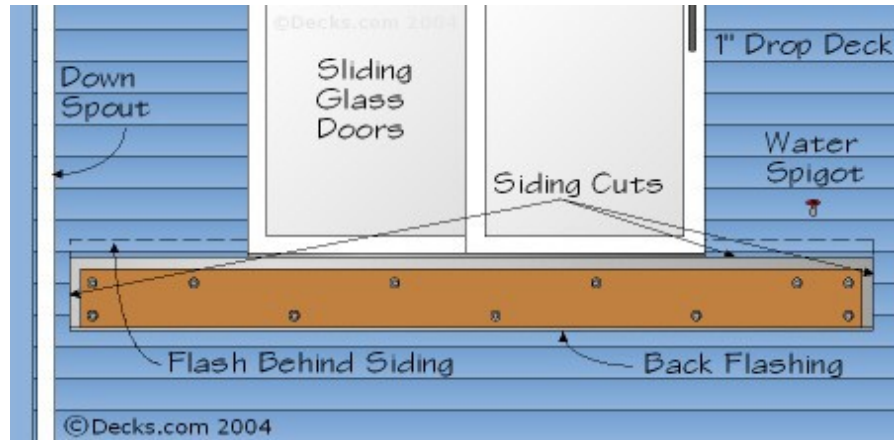
## Design consideration:

- All wooden members of decks shall be pressure treated ACQ (approved pressure treated to .40 retention) or rot resistant wood (redwood or cedar).
- Decks shall be designed and constructed for a load of 50# per square foot. If there will be additional loads (large planters, hot tub, etc.), additional design issues must be addressed.
- Metal flashing (stainless steel, copper, or vinyl) is required behind the ledger board where it attaches to the house. Galvanized metal or aluminum is not to be used.
- Look for hardware with “zamx” or “triple zinc”.
- Joist hangers with proper nails are required whenever joists do not have at least 1 ½ “bearing. (Hangers must be rated for the ACQ treated lumber.
- Footings are to be a minimum of 42” deep below grade. Footing diameters will vary with the size of the deck and number of posts. Footing holes shall not contain loose soil and be flared at the bottom. (If you are considering a future 3-seasons porch or enclosed deck, footings should be located at the outer extremities of the deck and adjusted in size for the increased loads.)
- Posts to be anchored to prevent movement.
- Maximum cantilever (joist overhang past the beam) is one quarter of the actual span, without special design. Also beams should not overhang posts by more than 1’ without special design.
- Guardrails at least 36” high are required on decks over 30” above the adjacent grade.
- Decks can be constructed over escape windows with certain conditions.
- Handrails are required for 4 or more stair risers. The height shall be 34 – 38” above the tread nosing.

## Inspections required:

- Footing – call for a footing inspection after footing holes are dug and before pouring concrete. Footing holes shall not contain loose soil and should be flared at the bottom of the holes.
- Final inspection – after all work is completed and prior to use.

# DECK LEDGER BOARD INSTALLATION



## LEDGER

Photo courtesy of Decks.com

- Minimum of 1/2" lag screws or bolts are required and are to be staggered with spacing as shown in the table below.
- All screws or bolts are to be placed 2 inches in from the bottom and top edge of the ledger and between 2 and 5 inches in from the ends.
- Tips of the lag screws are to extend past the inside face of the band joist.
- Lag screws, bolts, and washers are to be hot-dipped galvanized or stainless steel when using.
- Ledger boards shall not be attached to open web trusses, brick veneers, or hollow concrete block.

JOIST SPAN	6' OR LESS	6'1" to 8'	8'1" to 10'	10'1" to 12'	12'1" to 14'	14'1" to 16'	16'1" to 18'
Connection details	Inches on center spacing of fasteners						
1/2" diameter lag screw	30	23	18	15	13	11	10
1/2" diameter bolt	36	36	34	29	24	21	19

- When using engineered fastener screws (Ledgerlock®), follow manufacturer's instructions for spacing and location.

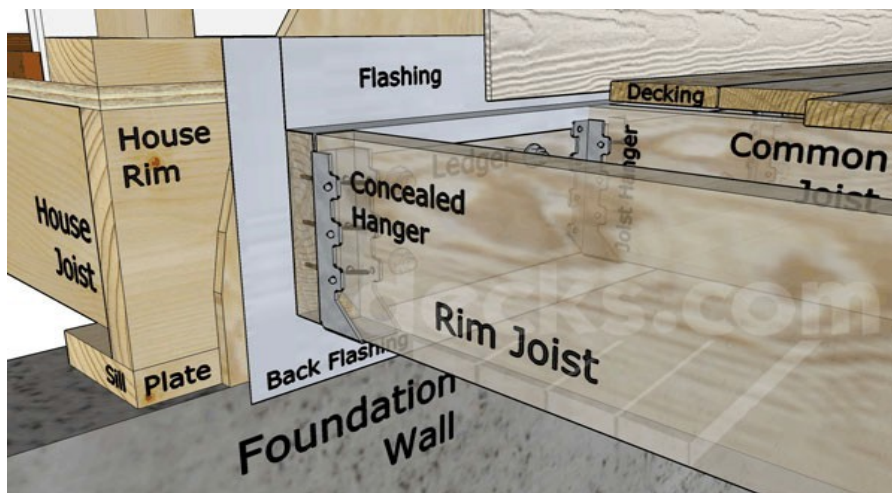


Photo courtesy of Decks.com

## FLASHING

- House siding must be removed prior to the installation of the ledger board.
- Flashing is required where a ledger is fastened to wood construction.
- Flashing material shall be copper with copper nails, stainless steel, UV resistant plastic, or galvanized steel coated with G-185 coating.

# Beam, Footing, & Span Table

(Maximum allowable spans are based on #2 Southern Pine CCA .40 pressure treated lumber with no cantilever. Other lumber species will have shorter spans than indicated.)

Joist Size	Joist Spacing	Joist Max. Span	Beam Size	Beam Max Span (Post Spacing)	Posts: Size & Max. Height Above Grade			Footing Diameter Inches	Corner Footing Diameter Inches	Deck Boards Min. Size
					4 x 4 In Feet	4 x 6 In Feet	6 x 6 In Feet			
2 X 6	12" o.c.	9'-11"	2—2 x 6	5'-4"	8	8		14	12	5/4 x 6
2 x 6	16" o.c.	9'-0"	2—2 x 6	5'-4"	8	8		12	12	5/4 x 6
2 x 6	24" o.c.	7'-7"	2—2 x 6	5'-11"	8	8		12	12	2x4 or 2x6
2 x 8	12" o.c.	13'-1"	2—2 x 8	5'-9"	8	8	14	16	14	5/4 x 6
2 x 8	16" o.c.	11'-10"	2—2 x 8	6'-2"	8	8	14	16	12	5/4 x 6
2 x 8	16" o.c.	11'-10"	2—2 x 10	7'-4"	8	8	14	18	14	5/4 x 6
2 x 8	24" o.c.	9'-8"	2—2 x 8	6'-9"	8	8	14	16	12	2x4 or 2x6
2 x 8	24" o.c.	9'-8"	2—2 x 10	8'-0"	8	8	14	18	14	2x4 or 2x6
2 x 10	12" o.c.	16'-2"	2—2 x 10	6'-0"	8	8	14	20	16	5/4 x 6
2 x 10	16" o.c.	14'-0"	2—2 x 10	6'-9"	8	8	14	18	16	5/4 x 6
2 x 10	16" o.c.	14'-0"	2—2 x 12	8'-0"	8	8	14	20	16	5/4 x 6
2 x 10	24" o.c.	11'-5"	2—2 x 10	7'-4"	8	8	14	18	14	2x4 or 2x6
2 x 10	24" o.c.	11'-5"	2—2 x 12	8'-7"	8	8	14	20	16	2x4 or 2x6
2 x 12	12" o.c.	18'-0"	2—2 x 12	7'-0"	8	8	14	22	16	5/4 x 6
2 x 12	16" o.c.	16'-6"	2—2 x 10	6'-0"	8	8	14	20	16	5/4 x 6
2 x 12	16" o.c.	16'-6"	2—2 x 12	7'-0"	8	8	14	20	16	5/4 x 6
2 x 12	24" o.c.	13'-6"	2—2x10	6'-9"	8	8	14	18	14	2x4 or 2x6
2 x 12	24" o.c.	13'-6"	2—2 x 12	8'-0"	8	8	14	20	16	2x4 or 2x6

- Post and footing sizes are approximate based on 2000 psf soil bearing and other assumptions for a standard deck.
- Beam sizes are based on a 2' cantilever (joists overhang the beam by 2').
- Sway bracing may be required on taller posts.
- *Note: Covered decks or rooms will require larger footings and additional requirements.*
- **Charts and tables are for reference. All plans are verified by the building department.**

## DECKING

- Verify the decking requirements with the spacing of the joists you intend to install.
- Most popular decking materials are treated 2 X 4, 2 X 6, or 5/4 X 6 lumber.
- When using "wood/plastic" composite material for deck boards, stair treads, handrail and guardrail systems, they should have a label showing it is in compliance with provisions of ASTM D 7032.

# OPEN DECK CONSTRUCTION

(Not to scale)

## Size of desired deck:

- A. Deck width           ft.     in.
- B. Joist length     ft.     in.

## Ledger board: (Flashing required)

- Size:     " X     " X     '
- Lag or bolt size:     \_

## Joists:

- Size:     " X     " X     '
- Spacing:     " on center
- Length of cantilever:     \_

## Beams: (Any splices to be over a post.)

- Beam size:     \_     \_     " X     "
- Length of beam:     \_     '
- Number of beams needed:     \_

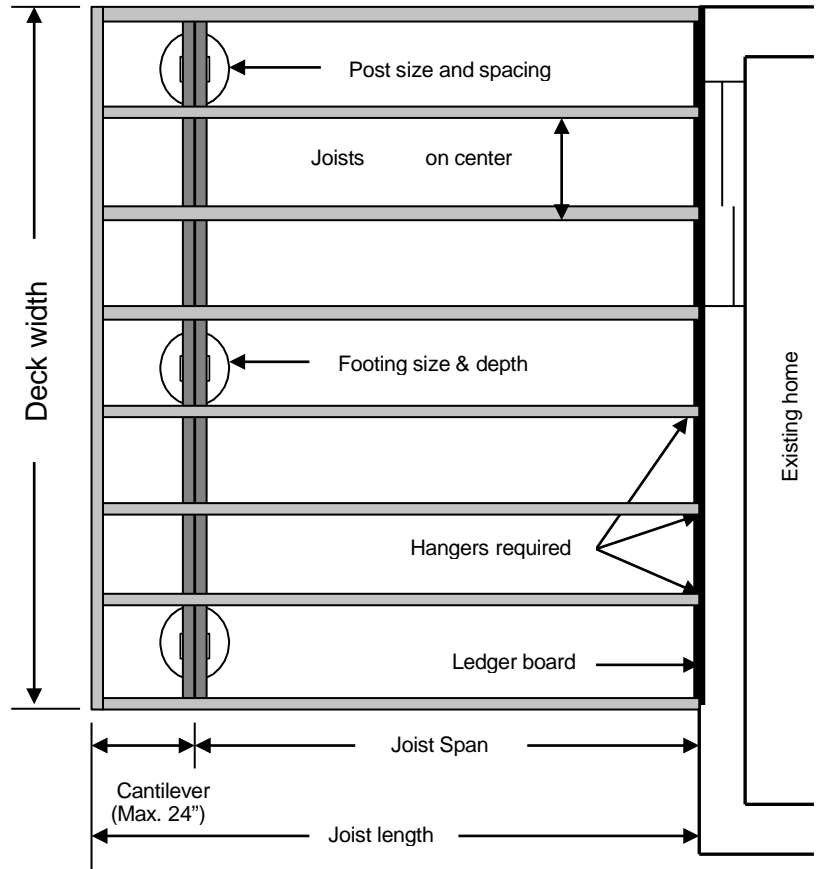
## Flashing material:     \_

## Posts:

- Height of deck off ground:     \_     '
- Posts spacing:     \_     '
- Number of posts needed:     \_

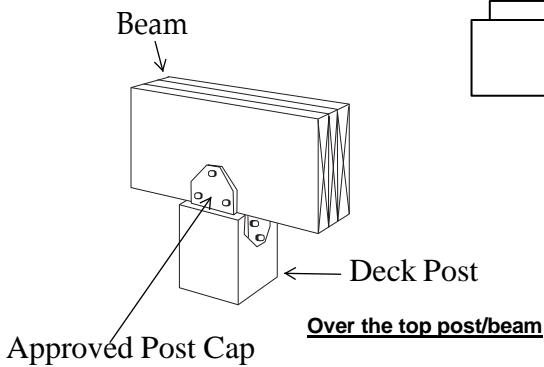
## Decking:

- Material:     \_
- Size desired:     \_     " X     "

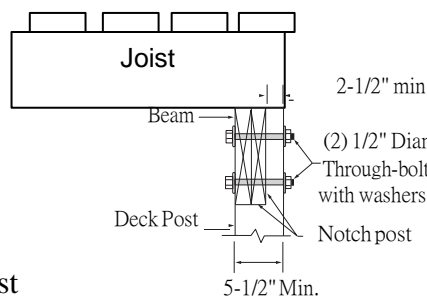


## Footings: (42" min. depth)

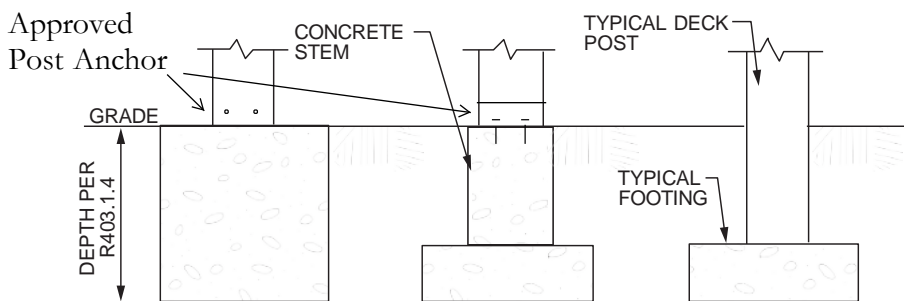
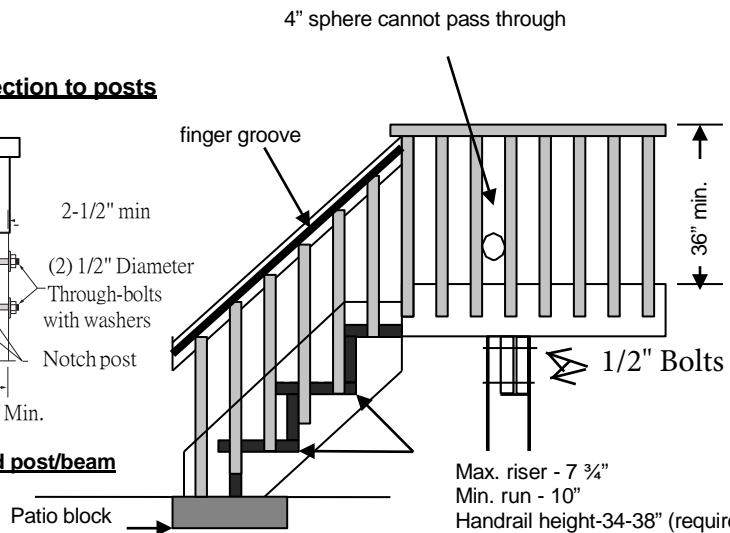
- Diameter of footing:     \_
- OPTION:



## Beam connection to posts



## Notched post/beam



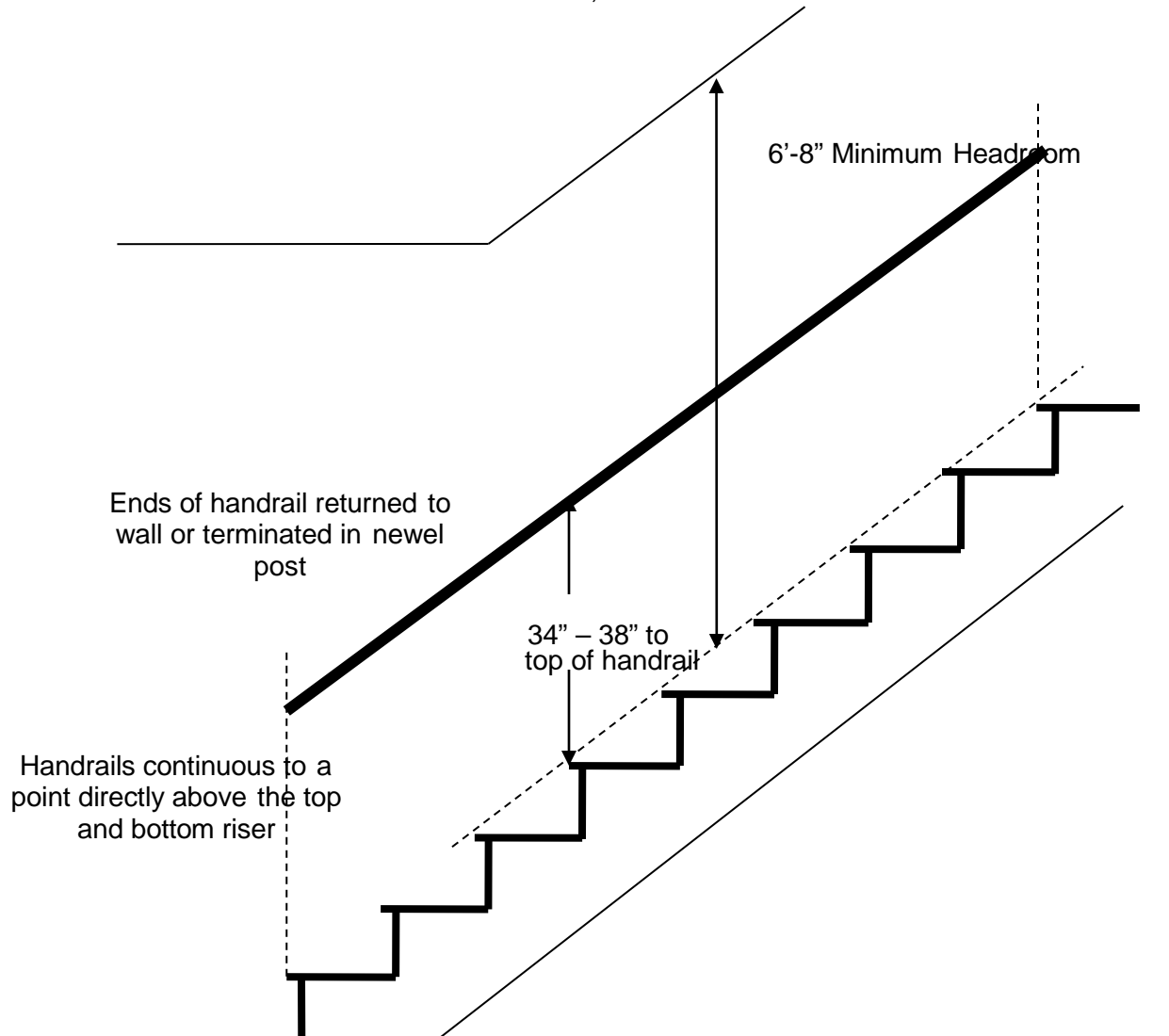
TYPICAL DECK POSTS TO DECK FOOTINGS

RESIDENTIAL STAIRS

# STAIRS & RAILINGS

One & Two Family Dwellings

**REFERENCE:** 2018 International Residential Code, Section R311 & R312.



## WIDTH

- Minimum width of 36 inches.
- Handrails shall not project more than 4.5 inches on either side of the stairway.

## HEADROOM

The minimum headroom in the stairway shall not be less than 6 feet, 8 inches measured vertically from the sloped plane of the tread nosing or from the floor surface of the landing or platform.

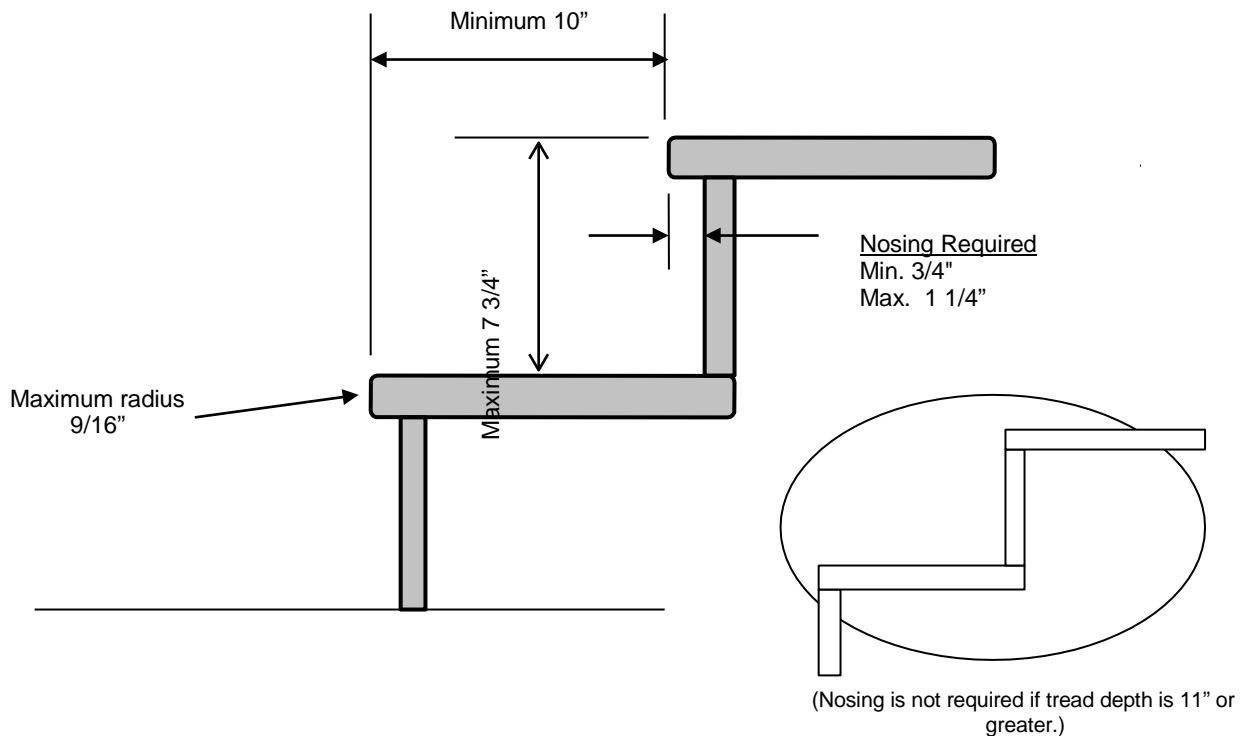
## HANDRAILS

- A handrail is required on at least one side of stairways. It shall be continuous the full length of the flight of stairs with four or more risers from a point directly above the top riser of a flight to a point directly above the lowest riser of the flight.
- Ends shall be returned to the wall or terminate in newel posts or safety terminals.
- Handrail height shall be between 34 and 38 inches measured from the nosing of the tread. The handgrip portion of handrails shall have a circular cross section of 1 ¼" minimum to 2" maximum. Other shapes that provide an equivalent grasping surface are permissible. Edges are to have a minimum radius of 1/8".

## RESIDENTIAL STAIRS

# TREAD DETAIL

One & Two Family Dwellings



## TREADS & RISERS

- Maximum riser is 7-3/4" and the minimum tread depth is 10".
- The greatest riser height within any flight of stairs shall not exceed the smallest by more than 3/8".
- The greatest tread depth within any flight of stairs shall not exceed the smallest by more than 3/8".
- Open risers are permitted provided the opening between treads does not permit the passage of a 4" ball.

## TREAD PROFILE

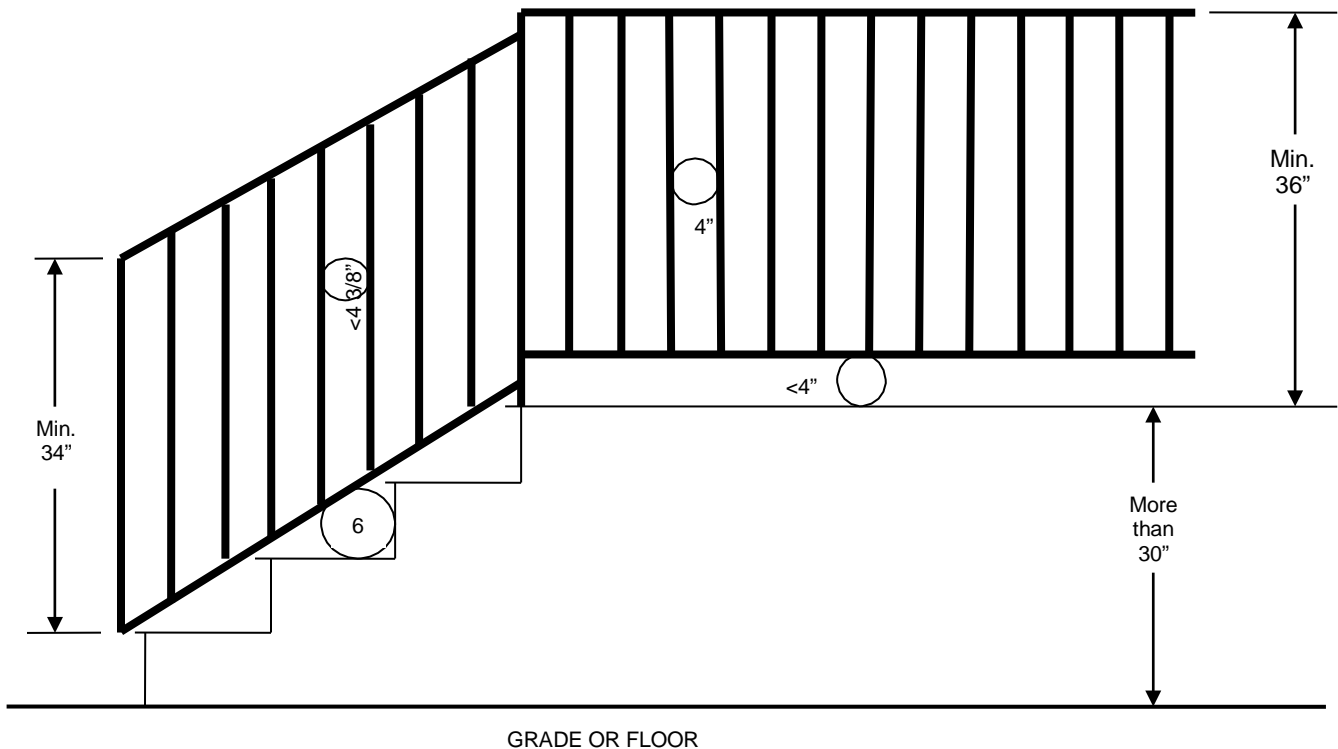
- A nosing not less than 3/4" but not more than 1-1/4" is required on stairways with solid risers less than 11" in width.
- The greatest nosing projection shall not exceed the smallest by more than 3/8".
- Open risers are permitted if the opening between the treads does not permit the passage of a 4" diameter sphere.
- (A nosing is not required where the tread depth is a minimum of 11".)

# RESIDENTIAL GUARDS

## One and Two Family Dwellings

### GUARDS REQUIRED

- Porches, decks, or raised floor surfaces located more than 30 inches above the floor or grade shall have guards not less than 36 inches in height.
- Open sides of stairs with a total rise of more than 30 inches above the floor or grade below shall have guards not less than 34 inches in height measured vertically from the nosing of the treads.
- Required guards shall have intermediate rails or ornamental closures that do not allow passage of a sphere 4 inches in diameter. Required guards shall not be constructed with horizontal intermediate rails or other ornamental pattern that results in a ladder effect.
- Stairway required guards
  - The triangular openings formed by the riser, tread, and bottom rail of a guard at the open side of a stairway are permitted to be of such a size that a sphere 6 inches in diameter cannot pass through.
  - Stairway guard openings shall not allow a sphere  $4 \frac{3}{8}$ " to pass through.



# HANDRAILS

One & Two Family Dwellings

### Handrail Shapes

**A**=Circular cross section of at least 1 ¼" and not greater than 2".  
**B**=not less than 1 ½".  
 Other profiles may be permitted. Check with building dept.

### Winders

Ends returned to wall

Top of handrail  
34" – 38"  
Above nose of tread

End terminated in  
newel post

### FYI

- Min. stairway width not less than 36".
- Handrails can encroach not more than 4.5" on each side.
- Handrails required on min. 1 side.
- All stairs should be illuminated.
- Flight of stairs shall not have vertical rise greater than 12'
- Maximum rise – 7 ¾"
- Minimum run – 10"
- A landing or floor is required at the each side of each exterior door.
- Landing to be minimum width of door served and minimum 36" in direction of travel.