Welcome

NCRBC
Egress Elements & Amendments

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Board Rule: 21 NCAC 12B .0301 Course Requirements

Disclaimer:

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A FEW HOUSE KEEPING RULES

1. **Each credit hour consists of 50 minutes instruction and 10-minute break**
2. **Class will consist of 6 hours of elective CE and 2 hours of board mandatory CE training**
3. **Each credit hour consists of 50 minutes instruction and 10-minute break**
4. **Open discussion knowledge reviews**
5. **Certificate of completion emailed after class along with a feedback survey**
6. **Facility amenities**

NCRBC Life Safety Requirements

Part 2- Egress Elements & Amendments

Course is intended to cover in depth the 2018 NCRBC requirements on the following sections:

1. R310- Emergency Escape and Rescue Openings
2. R311- Means of Egress
3. R312- Guard Requirements
4. 2023 Building Code Amendments Effective 1-1-2023

Purpose of the Codes

Section 101.3 Purpose: Both the Building Code and the Residential Code state the purpose of the code is to establish minimum requirements to safeguard public safety, health and general welfare through:

- Affordability
- Structural strength.
- Facilitating means of egress.
- Stability.
- Sanitation.
- Light and ventilation.
- Energy conservation.
- Safety to life and property from fire and other hazards attributed to the built environment.

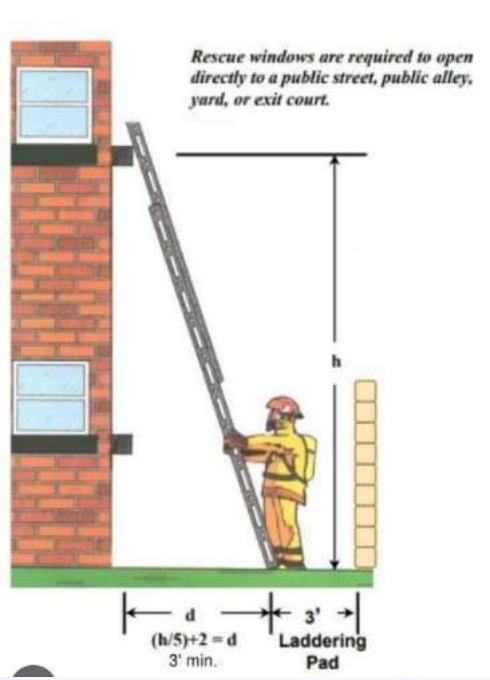
Earthquake

Hurricanes or High Wind Events

Structural Fire

Section R310

EMERGENCY
ESCAPE AND RESCUE OPENING



Section R310 Emergency Escape and Rescue Openings

6 subsections listed under R310 which cover:

1. R310.1 Where required & operational constraints
2. R310.2 Minimum dimension
3. R310.3 Doors
4. R310.4 Bars, grilles, covers and screens
5. R310.5 Dwelling additions
6. R310.6 Alterations or repairs of existing basements

R310.1 Emergency Escape and Rescue Openings

R310.1 Emergency escape and rescue opening required. *Basements*, *habitable attics* and every sleeping room shall have not less than one operable emergency escape and rescue opening. Where *basements* contain one or more sleeping rooms, an emergency escape and rescue opening shall be required in each sleeping room. Emergency escape and rescue openings shall open directly into a public way, or to a *yard* or court that opens to a public way.

- **Exception:** Storm shelters and *basements* used only to house mechanical *equipment* not exceeding a total floor area of 200 square feet (18.58 m2).

Egress & Ingress

R310.1 (definitions you need to know)
Emergency Escape and Rescue Openings

What's the definition of habitable attics?

What's the definition of a basement?

R310.1 Emergency Escape and Rescue Openings (exception)

R310.1 Emergency escape and rescue opening required. *Basements, habitable attics* and every sleeping room shall have not less than one operable emergency escape and rescue opening. Where *basements* contain one or more sleeping rooms, an emergency escape and rescue opening shall be required in each sleeping room. Emergency escape and rescue openings shall open directly into a public way, or to a *yard* or court that opens to a public way.

- **Exception:** Storm shelters and *basements* used only to house mechanical *equipment* not exceeding a total floor area of 200 square feet (18.58 m2).

R310.1 Emergency Escape and Rescue Openings (continued)

Emergency escape and rescue openings must open directly into a public way, or to a yard or court that opens to a public way.

Townhouse Development Issues- public way, yard or court

R310.1.1 Operational constraints and opening control

R310.1.1 Operational constraints and opening control devices. Emergency escape and rescue openings shall be operational from the **inside of the room without the use of keys, tools or special knowledge.** Window opening control devices complying with **ASTM F2090** shall be permitted for use on windows serving as a required emergency escape and rescue opening.

R310.2 Emergency Escape and Rescue Openings

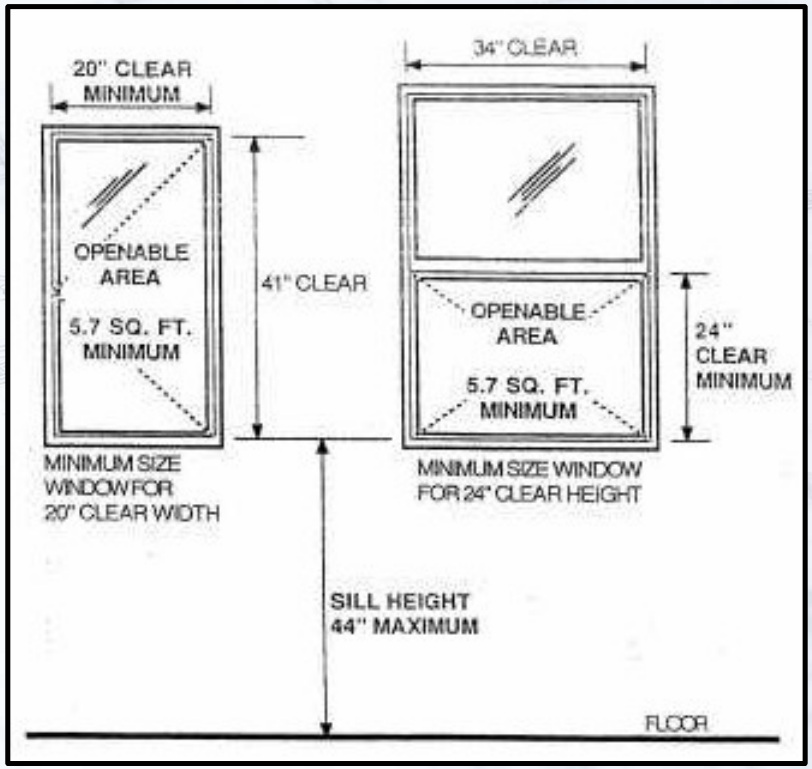
R310.2 Emergency escape and rescue openings. Emergency escape and rescue openings shall have minimum dimensions as specified in this section.

R310.2.1 Minimum opening area. Emergency and escape rescue openings shall have:

R310.2.1 Minimum Dimension (specific directions)

- **5** square feet minimum **glazing** area in case of a ground floor area.
- **5.7** square feet minimum **glazing** area for upper story.
- **4** square feet minimum net clear **opening.**
- **22-inch** minimum **net clear** opening height.
- **20-inch** minimum **net clear** opening width.

https://www.youtube.com/watch?v=O-7d0akwEOQ



R310.2.2 Window sill height

Sill is below grade-Window Wells

R310.2.2 Window sill height. Where a window is provided as the emergency escape and rescue opening, it shall have a sill height of **not more than 44 inches** above the floor; where the sill height is below *grade*, it shall be provided with a window well in accordance with **Section R310.2.3.**

R310.2.3 Window wells

Sill is below grade-Window Wells

R310.2.3 Window wells

Sill is below grade-Window Wells

Dimensions

R310.2.3 Window wells. The horizontal area of the window well shall be not less than **9 square feet**, with a horizontal projection and width of not less than **36 inches**. The area of the window well shall allow the emergency escape and rescue opening to be fully opened.

Exception: The ladder or steps required by Section R310.2.3.1 shall be permitted to encroach not more than **6 inches** into the required dimensions of the window well.

R310.2.3.1 Ladder and steps

Sill is below grade-Window Wells

R310.2.3.1 Ladder and steps. Window wells with a vertical depth **greater than 44 inches** shall be equipped with a **permanently affixed ladder or steps** usable with the window in the fully open position. Ladders or steps required by this section shall not be required to comply with Sections R311.7 and R311.8. Ladders or rungs shall have an inside width of not less than **12 inches**, shall project not less than **3 inches** from the wall and shall be spaced not more than **18 inches** on center vertically for the full height of the window well.

What is the dimension on steps?

Sill is below grade-Window Wells

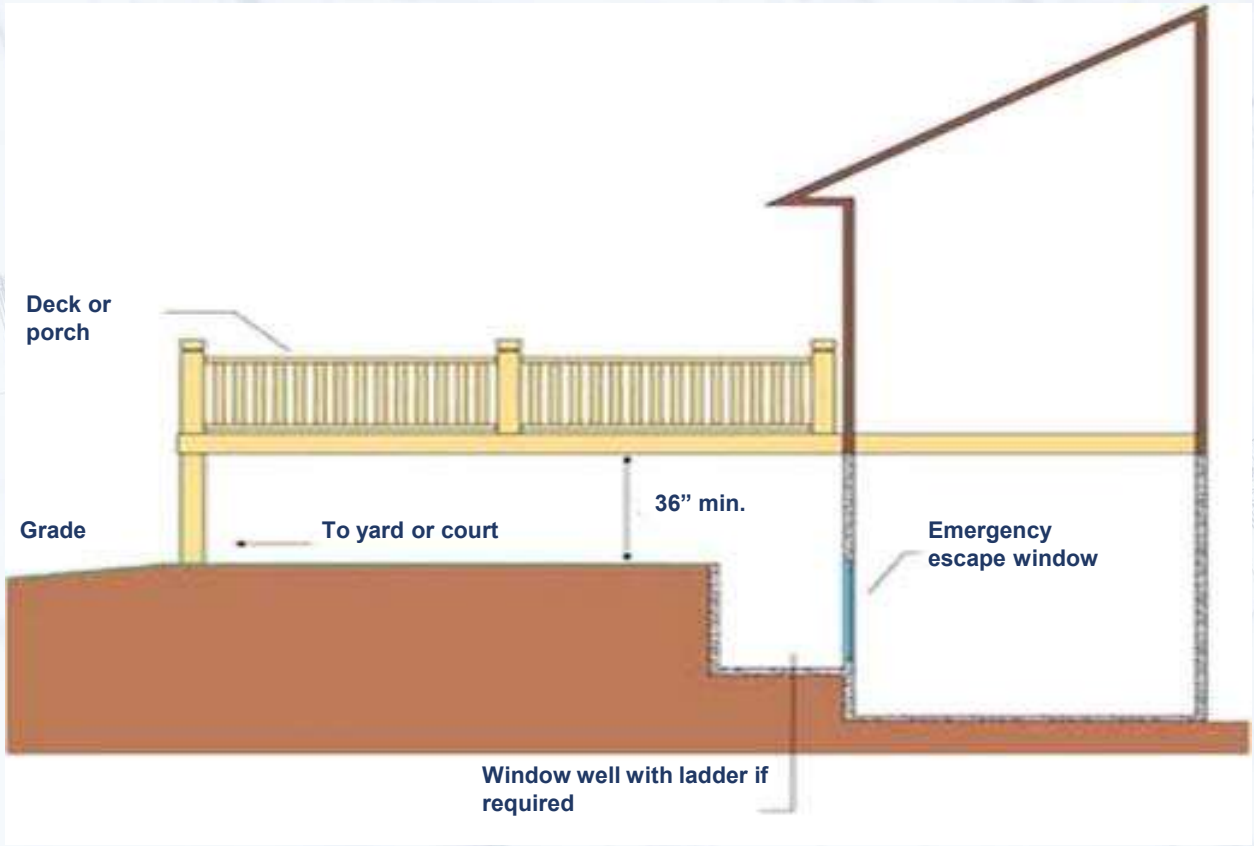
R310.2.4 Emergency escape and rescue openings under decks and porches

R310.2.4 Emergency escape and rescue openings under decks and porches. Emergency escape and rescue openings shall be permitted to be installed **under decks and porches** provided that the location of the deck allows the emergency escape and rescue openings to be fully opened and provides a path not less than **36 inches** (914 mm) in height to a ***yard* or court**.

YARD. An open space, other than a court, unobstructed from the ground to the sky, except where specifically provided by this code, on the *lot* on which a building is situated.

COURT. A space, open and unobstructed to the sky, located at or above *grade* level on a *lot* and bounded on three or more sides by walls or a building.

R310.2.4 Emergency escape and rescue openings under decks and porches



What about width of path?

R310.2.5 Replacement windows

Grandfathered Rule- Can't make opening more restrictive

Replacement windows installed in buildings meeting the scope of this code shall be exempt from the maximum sill height requirements of Sections R310.1 and Sections R310.2.1 and R310.2.2, **provided the replacement window meets the following conditions**:

1. The replacement window is the manufacturer's largest standard size window that will fit within the existing frame or existing rough opening. The replacement window is of the same operating style as the existing window or a style that provides for an equal or greater window opening area than the existing window.
2. The replacement window is not part of a change of occupancy.

R310.3 Emergency escape and rescue doors- New

R310.3 Emergency escape and rescue doors. Where a door is provided as the required emergency escape and rescue opening, it shall be permitted to be a side-hinged door or a slider. Where the opening is below the adjacent ground elevation, it shall be provided with a bulkhead enclosure.

R310.3.1 Minimum door opening size. The minimum net clear height opening for any door that serves as an emergency and escape rescue opening shall be in accordance with Section R310.2.1.

R310.3.2 Bulkhead enclosures. Bulkhead enclosures shall provide direct access from the *basement*. The bulkhead enclosure shall provide the minimum net clear opening equal to the door in the fully open position.

R310.4 Bars, grilles, covers and screens

R310.4 Bars, grilles, covers and screens. Bars, grilles, covers, screens or similar devices are permitted to be placed over emergency escape and rescue openings, bulkhead enclosures, or window wells that serve such openings, provided that the minimum net clear opening size complies with Sections R310.1.1 to R310.2.3, and such devices shall be releasable or removable from the **inside without the use of a key, tool, special knowledge or force greater** than that required for the normal operation of the escape and rescue opening.

R310.5 Dwelling additions

R310.5 Dwelling additions. Where *dwelling additions* occur that contain sleeping rooms, an emergency escape and rescue opening shall be provided in each new sleeping room. Where ***dwelling additions* occur that have *basements***, an emergency escape and rescue opening shall be provided in the new *basement*.

Exceptions:

1. An emergency escape and rescue opening is not required in a new *basement* that contains a sleeping room with an emergency escape and rescue opening.
2. An emergency escape and rescue opening is not required in a new *basement* where there is an emergency escape and rescue opening in an existing *basement* that is accessible from the new *basement*.

R310.6 Alterations or repairs of existing basements

Grandfathered Rule-Existing Basements

R310.6 Alterations or repairs of existing basements. An emergency escape and rescue opening is not required where existing *basements* undergo alterations or repairs.

Exception: New sleeping rooms created in an existing *basement* shall be provided with emergency escape and rescue openings in accordance with Section R310.1.

ALTERATION. Any construction or renovation to an existing structure other than repair or addition that requires a permit. Also, a change in a building, electrical, gas, mechanical or plumbing system that involves an extension, addition or change to the arrangement, type or purpose of the original installation that requires a permit.

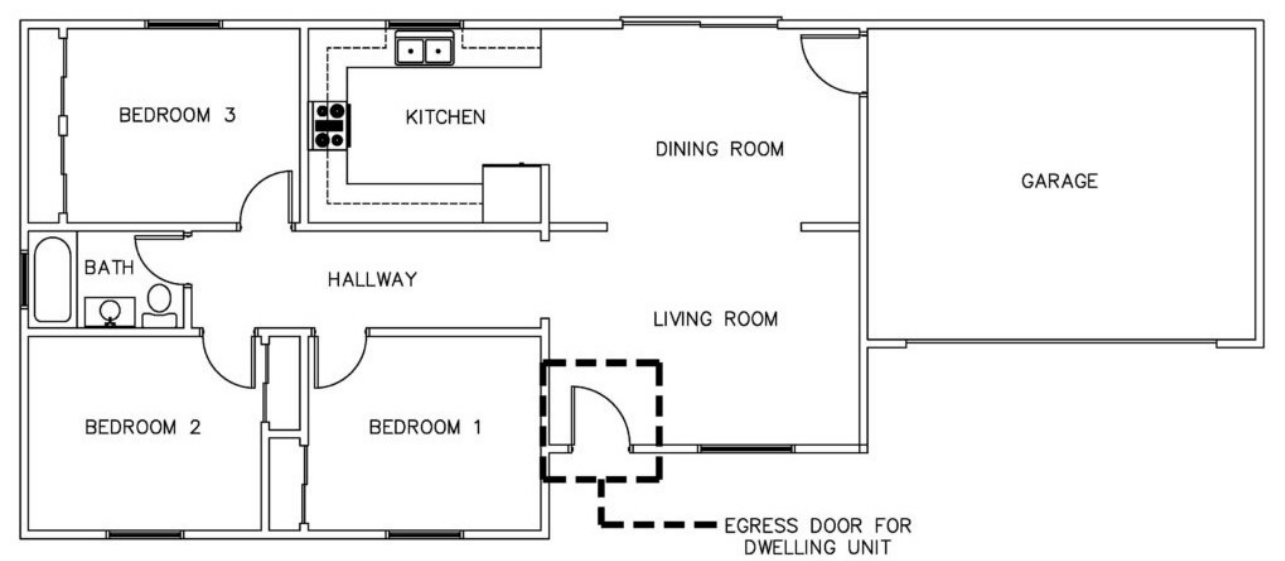
Knowledge Check

- The minimum net clear opening for upper floor level is 4 square feet? (True or False)
- The horizontal area of the window well shall be not less than ____ square feet, with a horizontal projection and width of not less than ____inches.
- An emergency escape and rescue opening can discharge under a front porch if it maintains a minimum ____ inch headroom?

R311 Means of Egress

This section contains the requirements for:

- Pathway
- Doors
- Landings at Doors
- Hallways
- Interior Egress Doors
- Stairways.
- Ramps.
- Hallways.
- Landings.
- Handrails.



R311.1 Means of egress

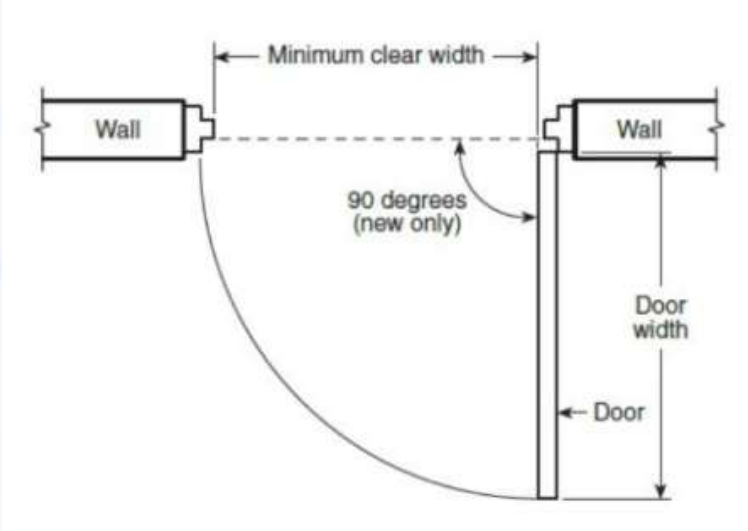
R311.1 Means of egress. All *dwellings* shall be provided with a means of egress as provided in this section. The means of egress shall provide a continuous and unobstructed path of vertical and horizontal egress travel from all portions of the *dwelling* to the exterior of the *dwelling* at the required exterior egress door without requiring travel through a **garage.**

Exception: Equipment service platforms may be served by ladders constructed in accordance with Section R310.2.3.1.

Not through a Garage

R311.2 Egress door

R311.2 Egress door. Not less than **one exterior egress door** shall be provided for each *dwelling* unit. The egress door shall be **side-hinged**, and shall provide a clear width of not less than **32 inches** where measured between the face of the door and the stop, with the door open **90 degrees**. The clear height of the door opening shall be not less than **78 inches** in height measured from the top of the threshold to the bottom of the stop. **Other exterior doors** shall not be required to comply with these minimum dimensions. Egress doors shall be readily openable from inside the *dwelling* without the use of a key or special knowledge or effort.



R311.3 Floors and landings at exterior doors

R311.3 Floors and landings at exterior doors. There shall be a **landing** or **floor** on each side of **each exterior door**. The width of each landing shall be not less than the door served. Every landing shall have a dimension of not less than **36 inches** measured in the direction of travel. The slope at exterior landings shall not exceed 1/4 unit vertical in 12 units horizontal.

Exception: Exterior **balconies** less than 60 square feet and only accessible from a door are permitted to have a landing less than 36 inches measured in the direction of travel.

R311.3.1 Floor elevations at the required egress doors

R311.3.1 Floor elevations at the required egress doors. Landings or finished floors at the required egress door shall be not more than 1 1/2 inches lower than the top of the threshold.

Exception: The exterior landing or floor shall be not more than 8 1/4 inches below the top of the threshold provided the door does not swing over the landing or floor.

R311.3.2 Floor elevations for other exterior doors

R311.3.2 Floor elevations for other exterior doors.
Doors other than the required egress door shall be provided with landings or floors not more than 8 ¼ inches below the top of the threshold.

Exception: A landing is not required where a stairway is located on the exterior side of the door, provided that the door does not swing over the stairway. Where exterior landings or floors serving the required egress door are not at *grade*, they shall be provided with access to *grade* by means of a ramp in accordance with Section R311.8 or a stairway in accordance with Section R311.7.

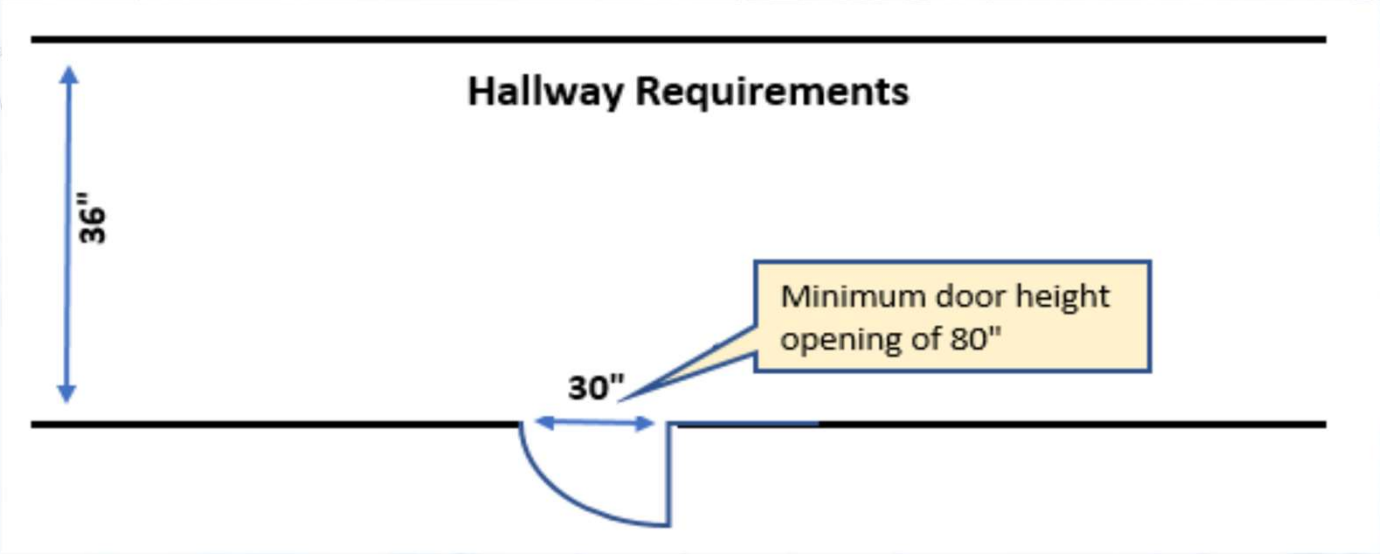
R311.3.3 Storm and screen doors

R311.3.3 Storm and screen doors. Storm and screen doors shall be permitted to swing over exterior stairs and landings.

R311.6 Hallways

R311.6 Hallways. The width of a hallway shall be not less than **3 feet** (914 mm) **measured from the finished surface of the walls**.

R311.6.1 Interior egress doors. **All** doors providing egress from habitable rooms shall have nominal dimensions of **2 feet 6 inches** width by **6 feet 8 inches** height. Interior egress doors shall be readily openable from the side from which egress is to be made without the use of a **key or special knowledge or effort**.



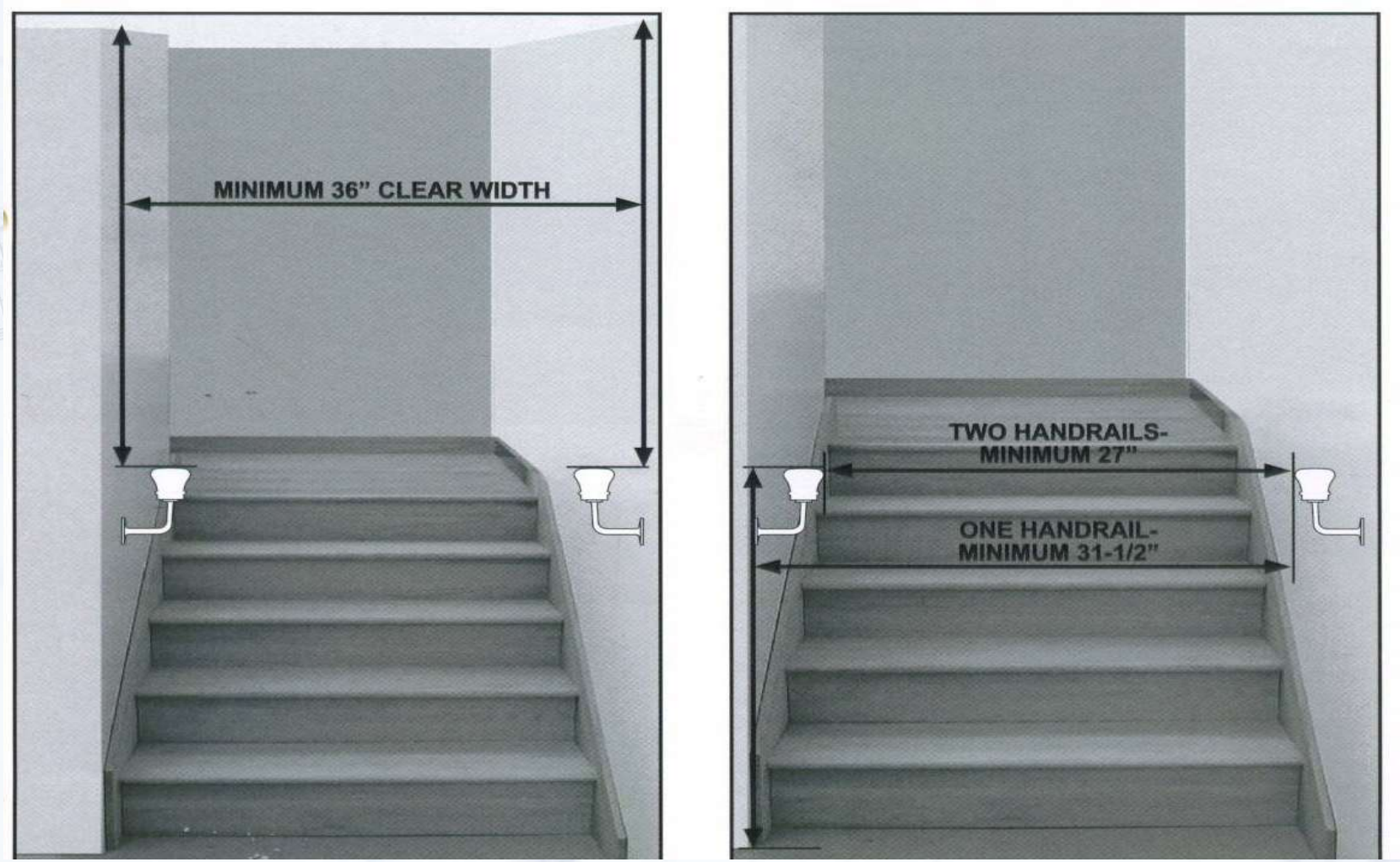
R311.7 Stairways

R311.7.1 Width. Stairways shall be not less than **36 inches** in clear width at all points above the permitted handrail height and below the required headroom height. Handrails shall not project more than **4 1/2 inches** on either side of the stairway and the clear width of the stairway at and below the handrail height, including treads and landings, shall be not less than **31 1/2 inches** where a handrail is installed on one side and **27 inches** where handrails are provided on both sides.

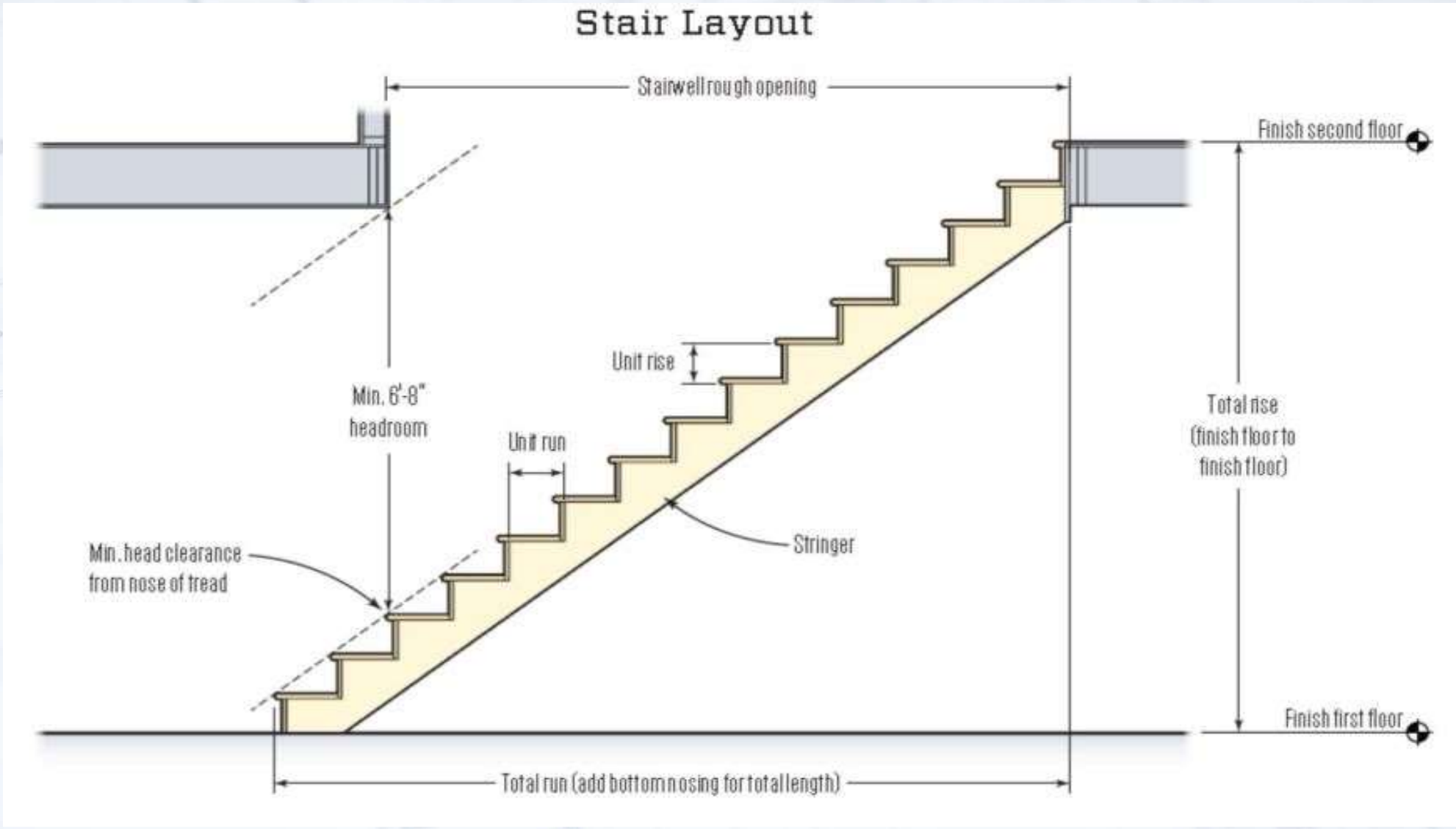
Exceptions:

1. The width of spiral stairways shall be in accordance with Section R311.7.10.1.
2. Stairways not required for egress shall be permitted to be a minimum width of 26 inches.

R311.7 Stairways



Stair Layout



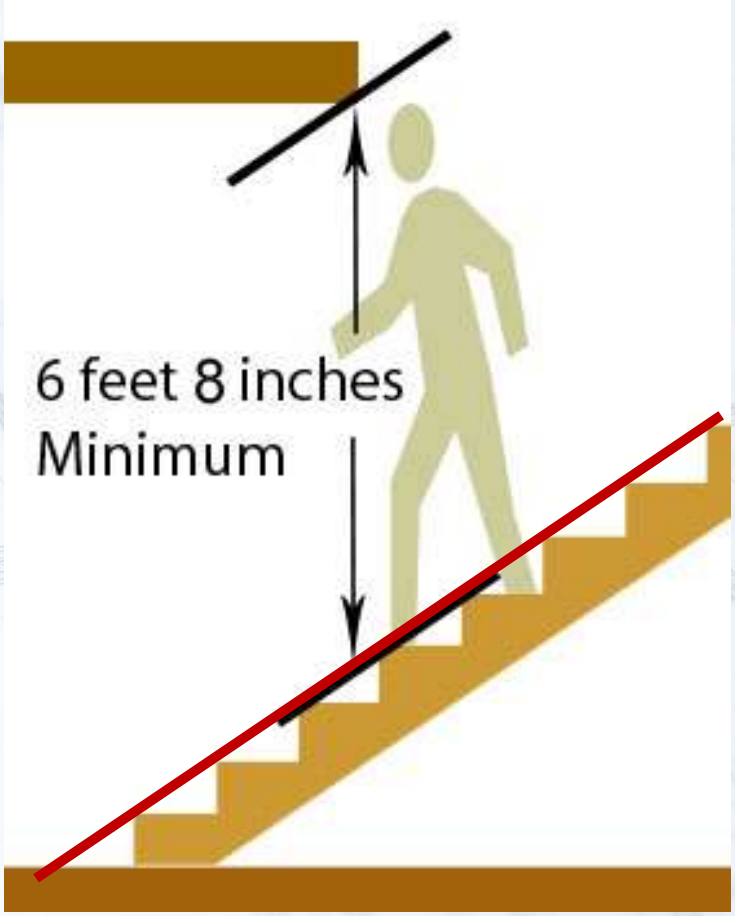
R311.7.2 Headroom

Not less than 6’8” (80-inches”)

R311.7.2 Headroom. The headroom in stairways shall be not less than **6 feet 8 inches** (2032 mm) measured vertically from the **sloped line adjoining the tread nosing** or from the floor surface of the landing or platform on that portion of the stairway.

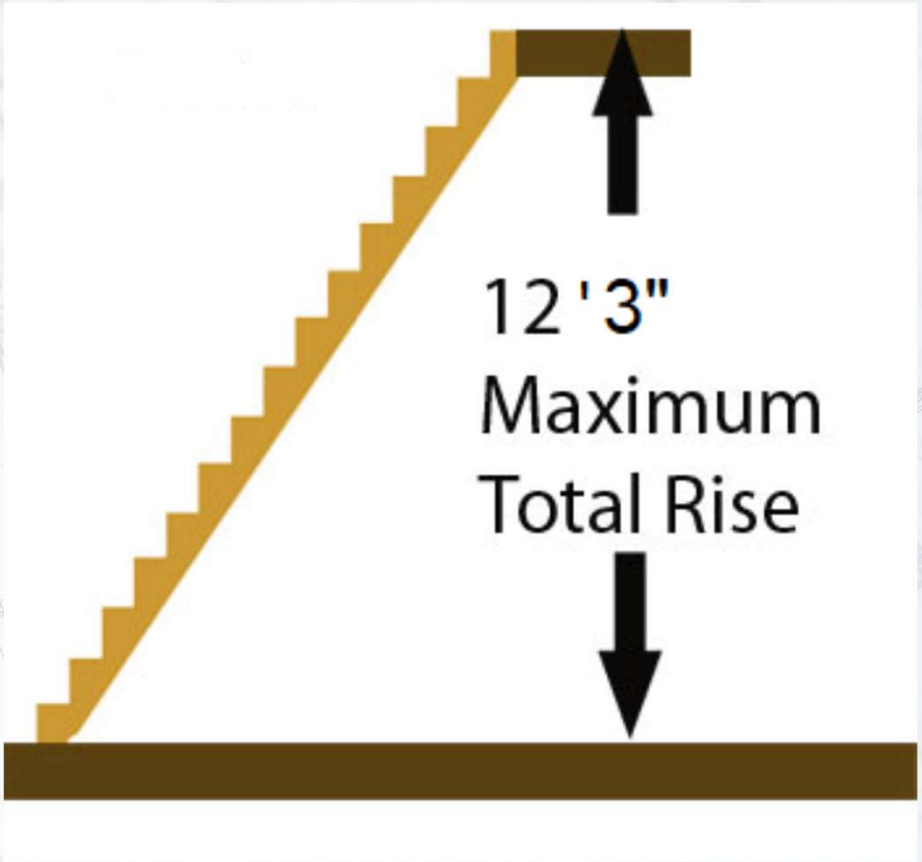
Exceptions:

1. Where the nosing's of treads at the side of a flight extend under the edge of a floor opening through which the stair passes, the floor opening shall be allowed to project horizontally into the required headroom not more than 43/4 inches (121 mm).
2. The headroom for spiral stairways shall be in accordance with Section R311.7.10.1.



R311.7.3 Vertical rise

R311.7.3 Vertical rise. A flight of stairs shall not have a vertical rise larger than 147 inches (3734 mm) between floor levels or landings.



R311.7.4 Walkline

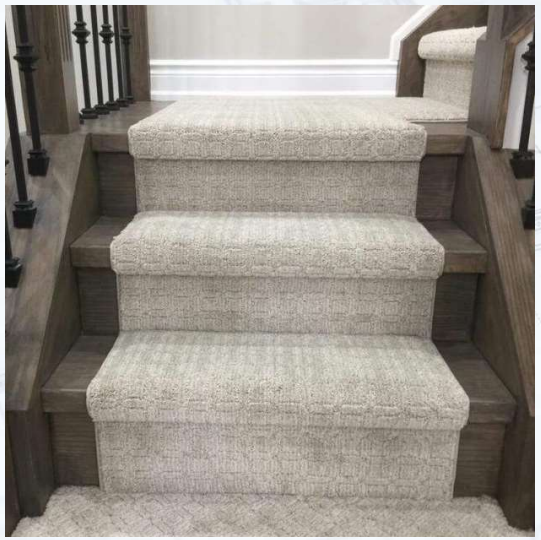
Amendment added this back in since it applies to winders and spiral stairs.

R311.7.4 Walkline. ~~Deleted~~ The walkline across winder treads shall be concentric to the curved direction of travel through the turn and located **12 inches** from the side where the winders are **narrower**. The **12 inch** dimension shall be measured from the widest point of the clear stair width at the walking surface of the winder. If winders are adjacent within the flight, the point of the widest clear stair width of the adjacent winders shall be used.

The delayed effective date of this Rule is January 1, 2021.

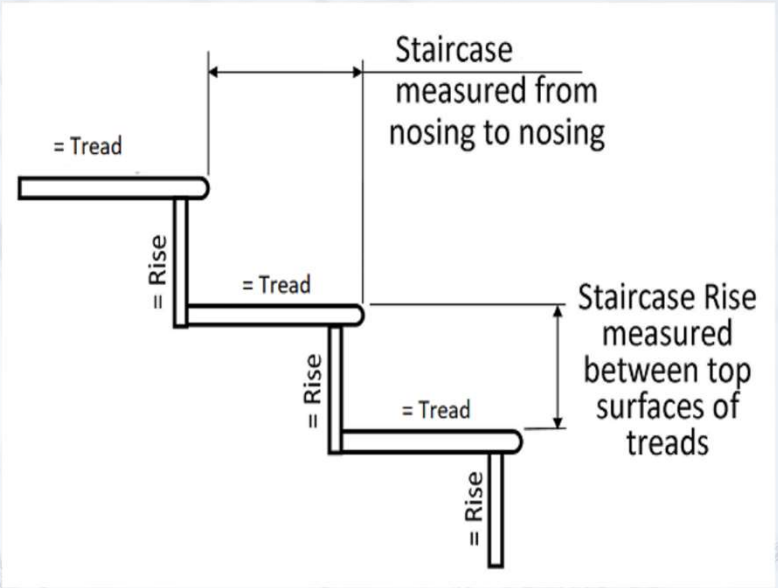
R311.7.5 Stair treads and risers

R311.7.5 Stair treads and risers. Stair treads and risers shall meet the requirements of this section. For the purposes of this section, dimensions and dimensioned surfaces shall be exclusive of carpets, rugs or runners.



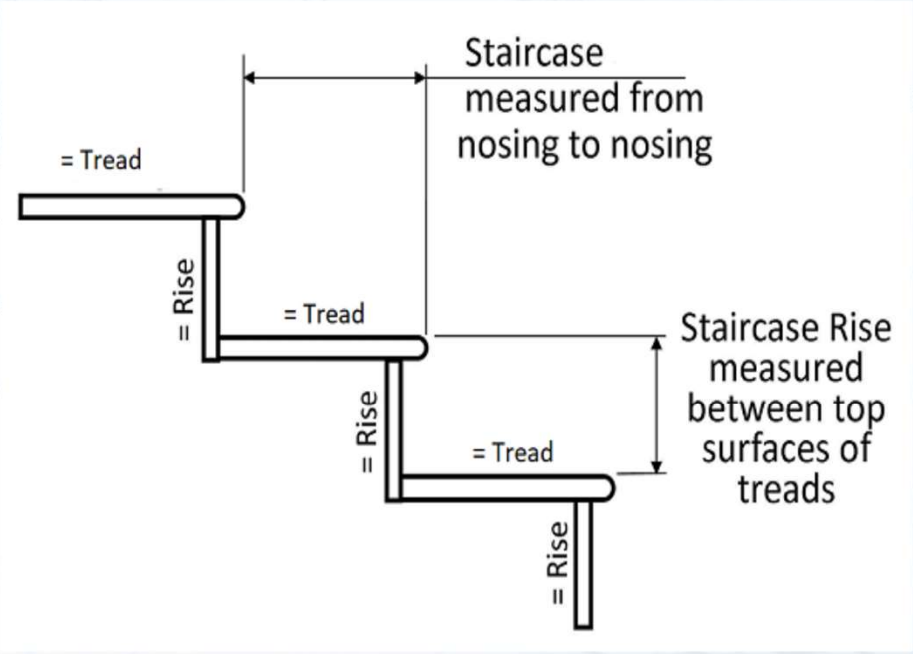
R311.7.5.1 Risers

R311.7.5.1 Risers. The riser height shall be not more than 8 1/4 inches. The riser shall be measured vertically between leading edges of the adjacent treads. The greatest riser height within any flight of stairs shall not exceed the smallest by more than 3/8 inch. The top and bottom riser of interior stairs shall not exceed the smallest riser within that stair run by more than 3/4 inch. The height of the top and bottom riser of the interior stairs shall be measured from the permanent finished surface (carpet excluded). Where the bottom riser of an exterior stair adjoins an exterior walk, porch, driveway, patio, garage floor, or finish grade, the height of the riser may be less than the height of the adjacent risers.

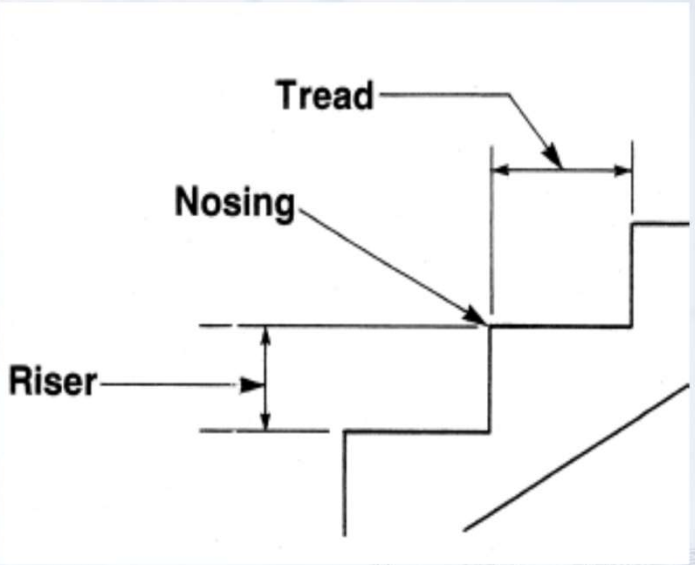


R311.7.5.2 Treads

R311.7.5.2 Treads. The minimum tread depth shall be not less than **9 inches**. The tread depth shall be measured horizontally between the vertical planes of the foremost projection of adjacent treads and at a right angle to the tread's leading edge. The greatest tread depth within any flight of stairs shall not exceed the smallest by more than **3/8 inch**.



R311.7.5.3 Nosings



R311.7.5.3 Nosings. The radius of curvature at the nosing shall be not greater than **9/16 inch**. A nosing projection not less than **3/4 inch** and not more than 1 1/4 inches shall be provided on stairways with solid risers. The greatest nosing projection shall not exceed the smallest nosing projection by more than **3/8 inch** between two stories, including the nosing at the level of floors and landings. Beveling of nosings shall not exceed 1/2 inch.

Exceptions:

1. A nosing projection is not required where the tread depth is not less than **11 inches**.
2. The opening between adjacent treads is not limited on stairs with a total rise of **30 inches** or less.

R311.7.5.4 Exterior plastic composite stair treads

R311.7.5.4 Exterior plastic composite stair treads. Plastic composite exterior stair treads shall comply with the provisions of this section and the requirements of ASTM D7032.

R311.7.6 Landings for stairways

R311.7.6 Landings for stairways. There shall be a **floor** or **landing** at the top and bottom of each stairway. A flight of stairs shall not have a vertical rise larger than **12 feet 3 inches** between floor levels or landings. The width of each landing shall not be less than the width of the stairway served. Every landing shall have a minimum dimension of **36 inches** (914 mm) measured in the direction of travel.

Exception: A floor or landing is not required at the top of an **interior flight** of stairs, including stairs in an enclosed garage, provided that a door does not swing over the stairs

Code Violation?

R311.7.7 Stairway walking surface

Code Violation?

R311.7.7 Stairway walking surface. The walking surface of treads and landings of stairways shall be sloped not steeper than **one unit vertical** in **48 inches horizontal** (2-percent slope).

R311.7.8 Handrails

R311.7.8 Handrails. Handrails shall be provided on not less than **one side** of each continuous run of treads or flight with **four or more risers**.

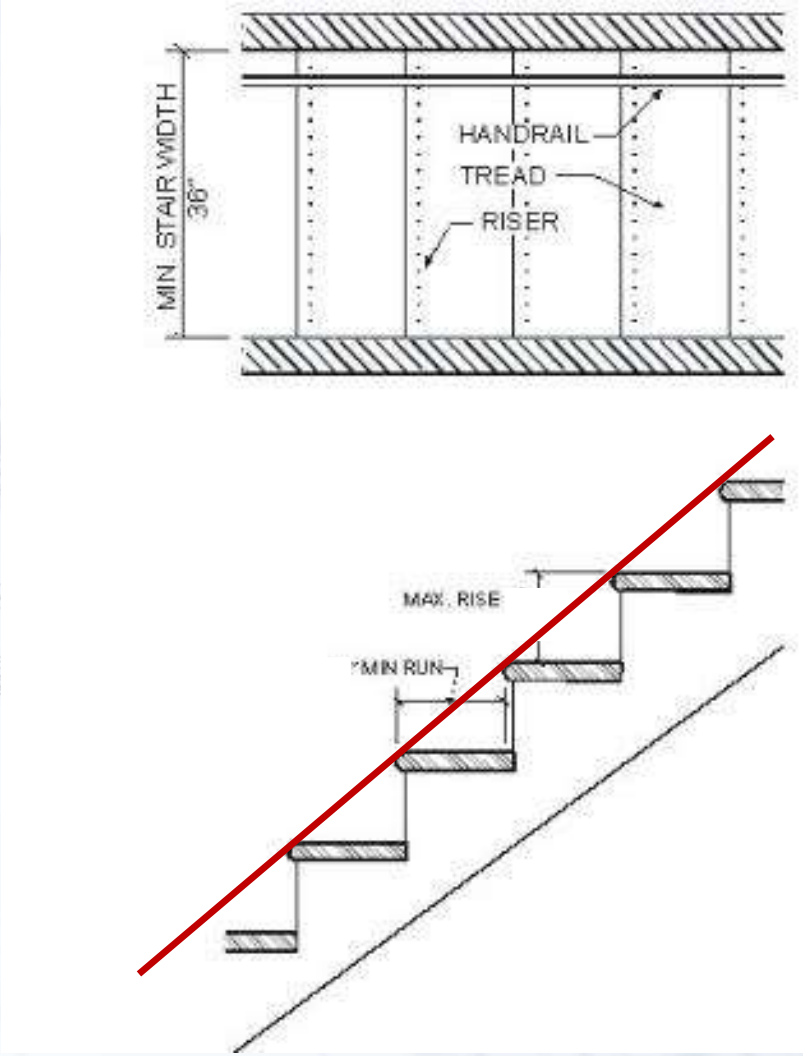
R311.7.8.1 Height

R311.7.8.1 Height. Handrail height, measured vertically from the sloped plane adjoining the tread nosing, or finish surface of ramp slope, shall be not less than **34 inches** and not more than **38 inches**.

Exceptions:

1. The use of a volute, turnout or starting easing shall be allowed over the lowest tread.

2. Where handrail fittings or bendings are used to provide continuous transition between flights, transitions at winder treads, the transition from handrail to *guard*, or used at the start of a flight, the handrail height at the fittings or bendings shall be permitted to **exceed 38 inches**.



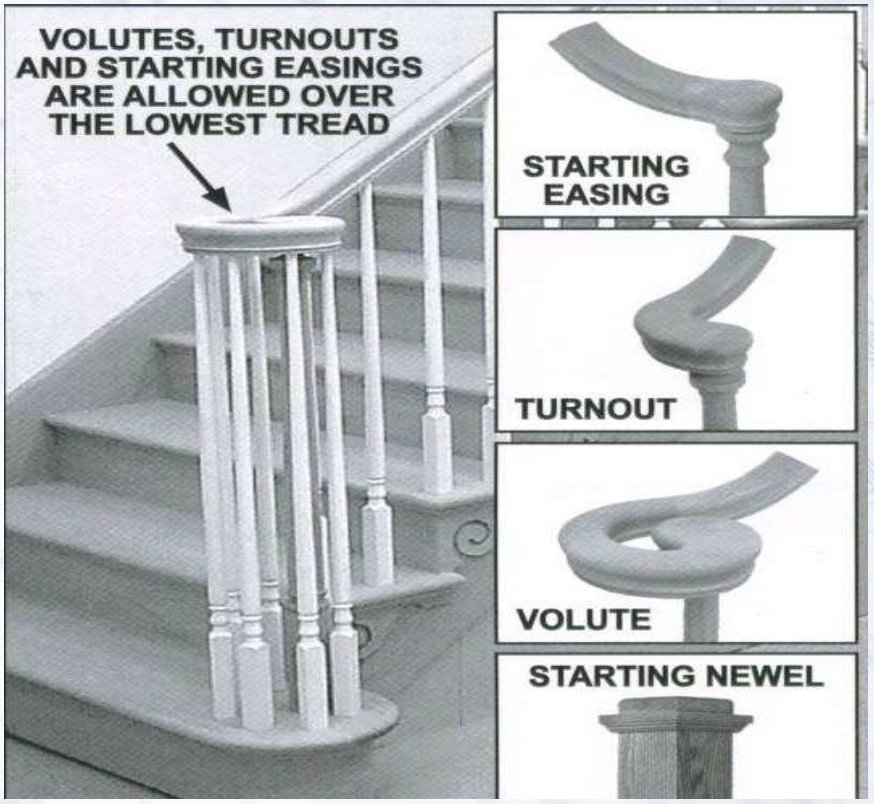
R311.7.8.2 Continuity

R311.7.8.2 Continuity. Handrails for stairways shall be continuous for the full length of the flight, from a point directly above the top riser of the flight to a point directly above the lowest riser of the flight. Handrail ends shall be returned or **shall terminate** in newel posts or safety terminals. Handrails adjacent to a wall shall have a space of not less than **1 1/2 inches** between the wall and the handrails.

Exceptions:

1. Handrails shall be permitted to be interrupted by a newel post at the turn.
2. The use of a volute, turnout, starting easing or starting newel shall be allowed over the lowest tread.
3. Two or more separate rails shall be considered continuous if the termination of the rails occurs within 6 inches of each other. If transitioning between a wall-mounted handrail and a guardrail/handrail, the wall-mounted rail shall return into the wall.

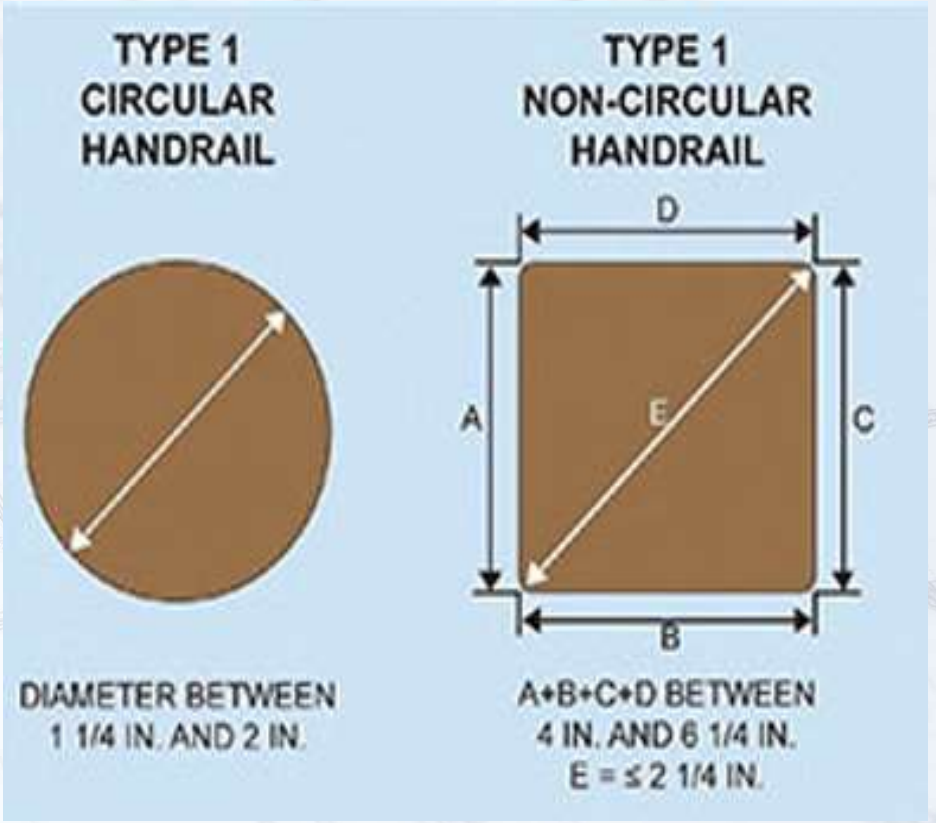
R311.7.8.2 Continuity (continued)



R311.7.8.3 Grip-size

R311.7.8.3 Grip-size. Required handrails shall be of one of the following types or provide equivalent graspability.

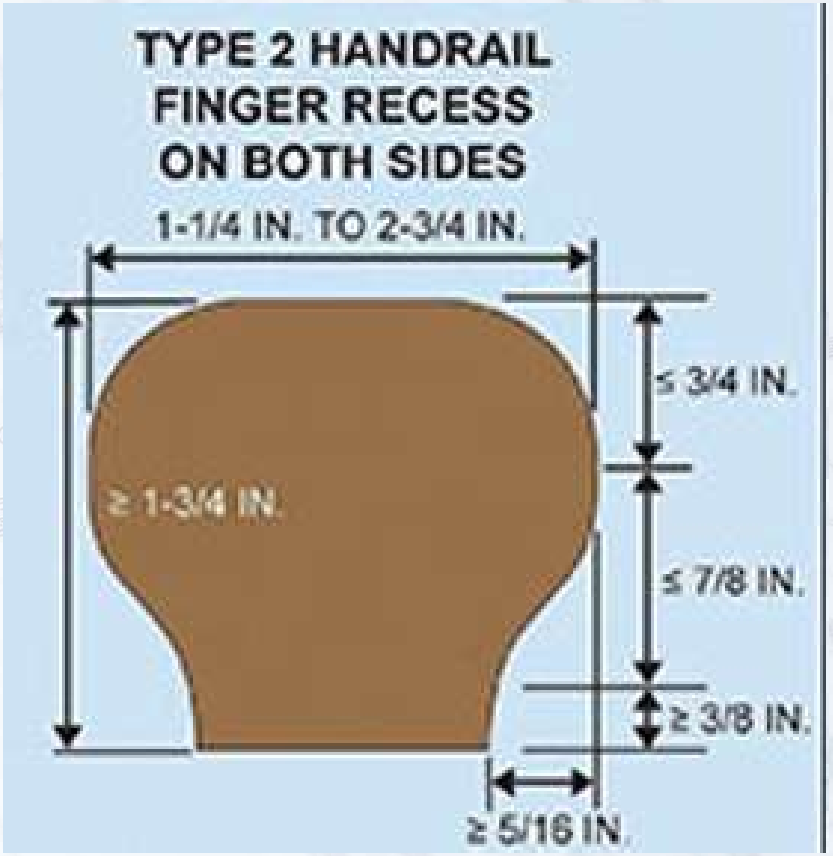
1. Type I. Handrails with a circular cross section shall have an outside diameter of not less than 1 1/4 inches and not greater than 2 inches. If the handrail is not circular, it shall have a perimeter dimension of not less than 4 inches and not greater than 6 1/4 inches with a cross section of dimension of not more than 2 1/4 inches. Edges shall have a radius of not less than 0.01 inch.



R311.7.8.3 Grip-size (CONTINUED)

2. Type II. Handrails with a perimeter greater than 61/4 inches (160 mm) shall have a graspable finger recess area on both sides of the profile. The finger recess shall begin within a distance of 3/4 inch measured vertically from the tallest portion of the profile and achieve a depth of not less than 5/16 inch within 7/8 inch below the widest portion of the profile. This required depth shall continue for not less than 3/8 inch to a level that is not less than 13/4 inches below the tallest portion of the profile. The width of the handrail above the recess shall be not less than 1 1/4 inches (32 mm) and not more than 2 3/4 inches. Edges shall have a radius of not less than 0.01 inch.

Exception: Exterior handrails (garages and areas exposed to the weather) shall not be more than 3 1/2 inches in cross-section dimension.



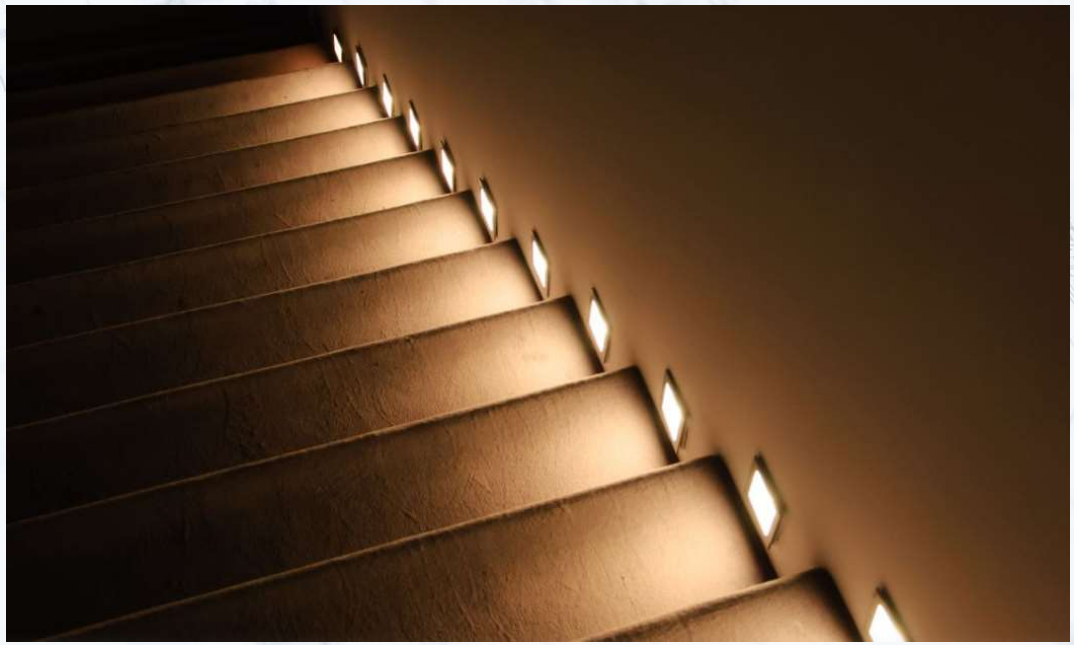
R311.7.8.4 Exterior plastic composite handrails

R311.7.8.4 Exterior plastic composite handrails.
Plastic composite exterior handrails shall comply with the requirements of ASTM D7032.

ASTM D7032
Standard Specification For Establishing Performance Ratings For Wood-Plastic Composite And Plastic Lumber Deck Boards, Stair Treads, Guards, And Handrails

R311.7.9 Illumination

R311.7.9 Illumination. Stairways shall be provided with illumination in accordance with Section R303.7.



Is this a code violation? Let's take a look.

R311.7.9 Illumination (Continued)

R303.7 Interior stairway illumination. Interior stairways shall be provided with an artificial **light source to illuminate the landings and treads.** The light source shall be capable of illuminating treads and landings to levels of not less than **1 foot-candle** (11 lux) as measured at the center of treads and landings. There shall be a **wall switch** at each floor level to control the light source where the stairway has **six or more risers**.

> **Exception:** A switch is not required where remote, central or **automatic control** of lighting is provided.

One-foot candle means that there is **one lumen of light on a surface that is 1 square foot in area**. Alternatively, one can say that if you have a point source of light with one lumen and it is one foot away from you, then the light intensity will be a one-foot candle.

Interior

R311.7.9 Illumination (Continued)

Exterior

R303.8 Exterior stairway illumination. Exterior stairways shall be provided with an artificial light source located at the **top landing** of the stairway. Exterior stairways providing access to a ***basement*** from the outdoor *grade* level shall be provided with an artificial light source located at the **bottom landing** of the stairway.

R311.7.10 Special Stairways

R311.7.10 Special stairways. Spiral stairways, bulkhead enclosure stairways and bowed tread stairways shall comply with the requirements of **Section R311.7** except as specified in Sections **R311.7.10.1 through R311.7.10.3**.

Everything previously reviewed in standard stairways applies unless modified in R311.7.10

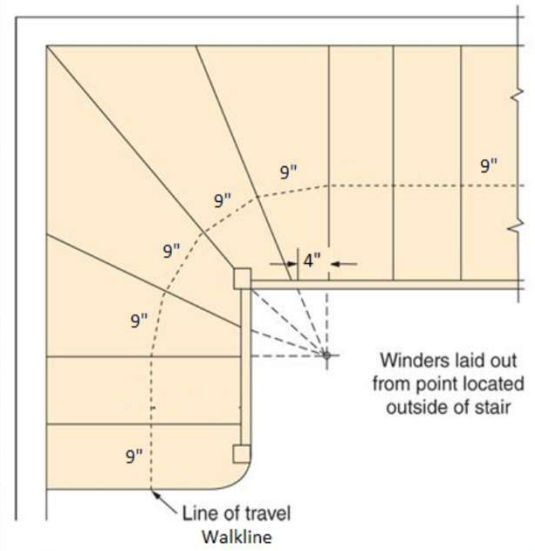
R311.7.10 Special Stairways

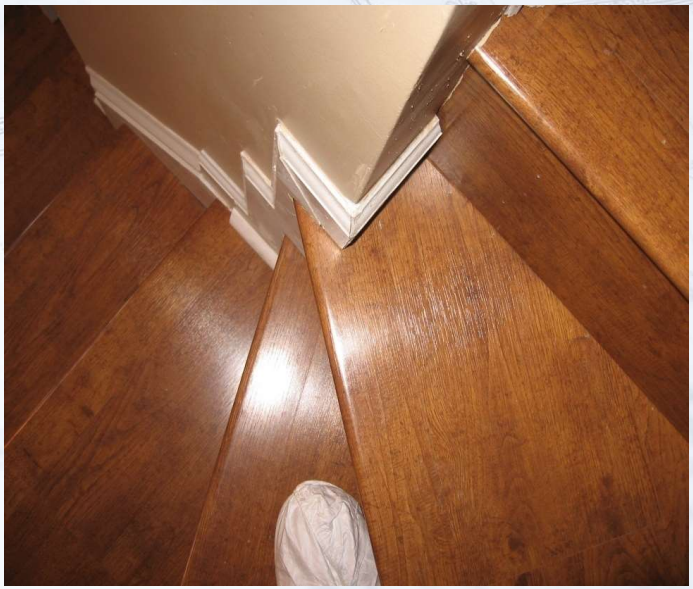
R311.7.10.1 Spiral stairways. Spiral stairways are permitted, provided that the clear width at and below the handrail is not less than **26 inches** (660 mm) and the walkline radius is not greater than **24 1/2 inches**. Each tread shall have a depth of not less than **6 ¾ inches** at the walkline. All treads shall be identical, and the rise shall be not more than **9 1/2 inches**. Headroom shall be not less than **6 feet 6 inches**.

R311.7.5.2.1 Winder treads

R311.7.5.2.1 Winder treads. Winder treads shall have a minimum tread depth of not less than **9 ~~inches~~** ~~measured between the vertical planes of the foremost projection of adjacent treads at the intersection with the~~ **~~walkline~~** as above a point **12 inches** from the side where the treads are narrower. Winder treads shall have a minimum tread depth of ~~not less than~~ **4 inches** at any point ~~within the clear width of the stair~~. Within any flight of stairs, the ~~largest~~ greatest winder tread depth at the **12 inch** walkline shall not exceed the smallest ~~winder tread~~ by more than **3/8 inch** .

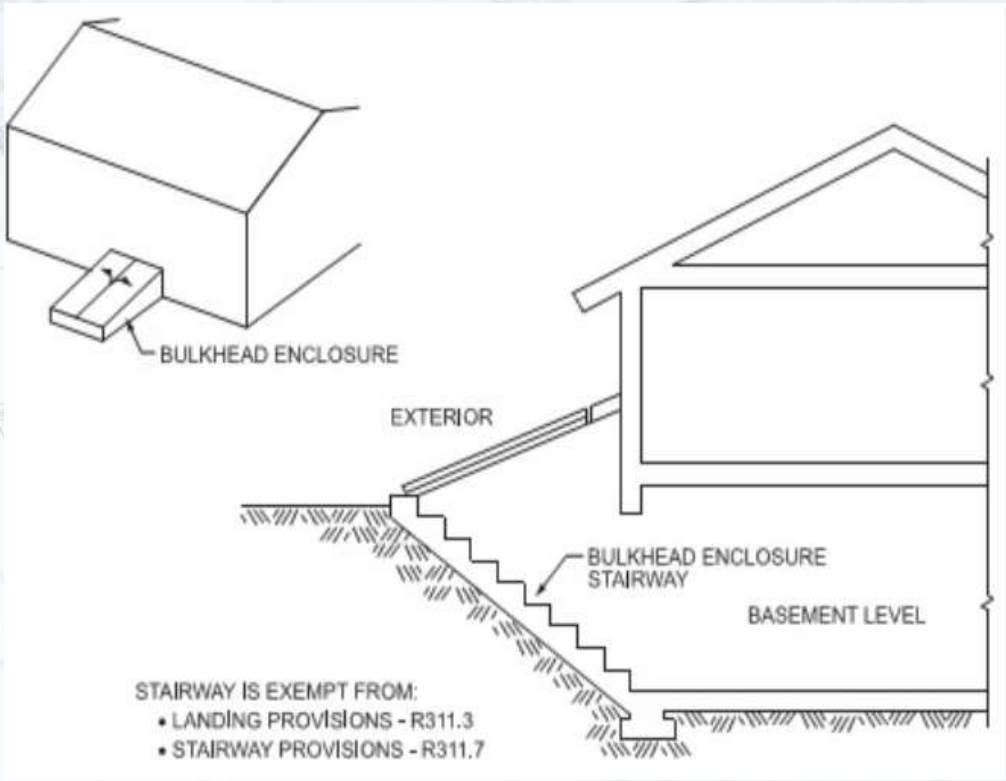
The delayed effective date of this Rule is January 1, 2021





R311.7.10.2 Bulkhead enclosure stairways

R311.7.10.2 Bulkhead enclosure stairways. Stairways serving bulkhead enclosures, not part of the required building egress, providing access from the outside *grade* level to the *basement* shall be **exempt** from the requirements of Sections R311.3 and R311.7 where the height from the ***basement* finished** floor level to ***grade*** adjacent to the stairway is not more than **8 feet** and the *grade* level opening to the stairway is covered by a bulkhead enclosure with hinged doors or other *approved* means.



R311.7.10.3 Bowed tread stairways

R311.7.10.3 Bowed tread stairways. Bowed tread stairways are permitted provided they are uniform in bowed tread depth along the entire width of the tread with not more than **3/8-inch** variance from greatest to smallest tread in the stairway flight. At no point shall the tread be less than **9 inches** with a nosing as listed in Sections R311.7.5.2 and R311.7.5.3, respectively.

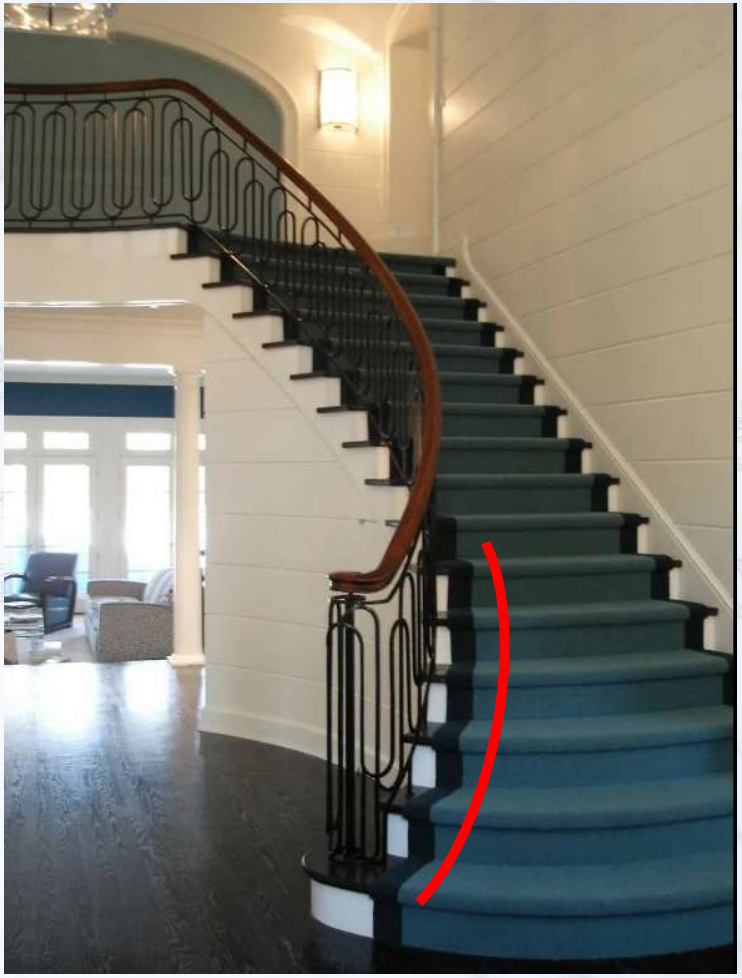
Entire Stairway all treads are bowed

R311.7.10.3.1 Standard stairway application (bowed)

R311.7.10.3.1 Standard stairway application. The **bottom three treads in a standard straight run stairway** application as listed under Section R311.7.5.2 are permitted to bow provided that, at no point along the width of the tread, they are less than **9 inches** as measured under Section R311.7.5.2 and each bowed tread is uniform with other bowed treads with no more than **3/8-inch** variance from greatest to least. Nosing is required as listed in Section R311.7.5.3.

R311.7.10.3.2 Bowed tread circular stairways

R311.7.10.3.2 Bowed tread circular stairways. Bowed treads in a circular stairway are permitted provided they are uniform, as per **winder treads** as listed in Section R311.7.5.2, measured at a point **12 inches** from the side where the treads are narrower. At this walk line, bowed treads must be uniform with other circular stairway treads with the greatest tread not to exceed the smallest by more than **3/8 inch**. Nosing is required as listed in Section R311.7.5.3.

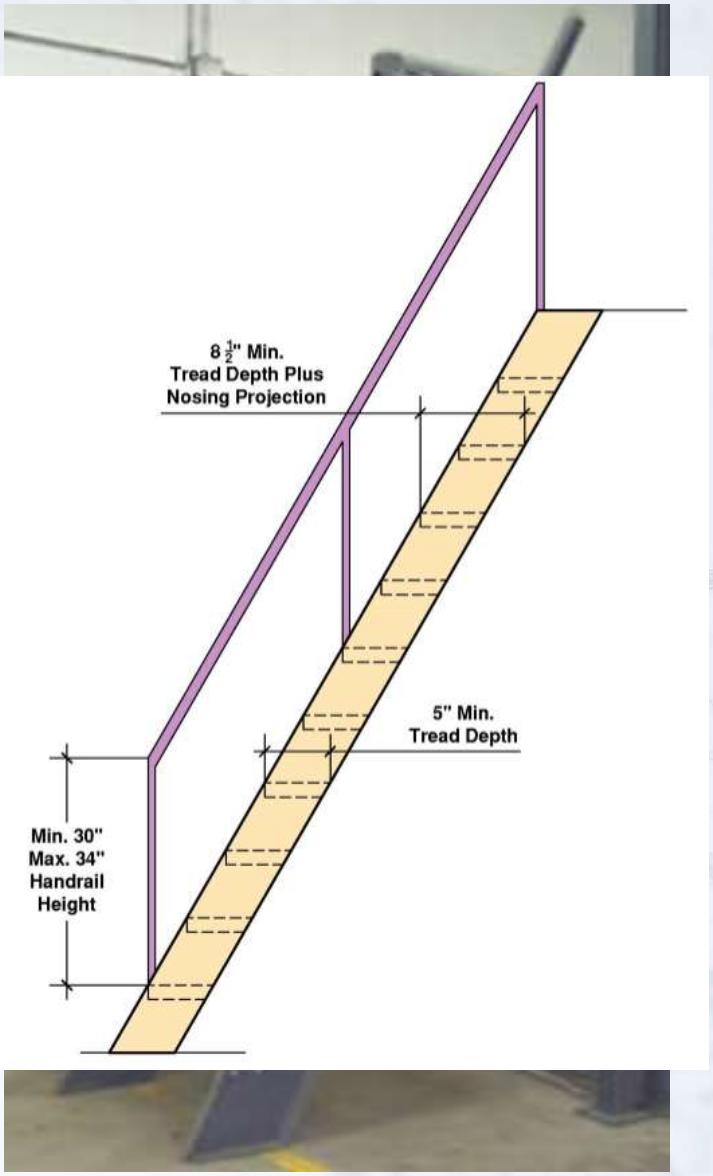


R311.7.12 Ships ladders

R311.7.12 Ships ladders. Ships ladders **shall not be used as an element of a means of egress**. Ships ladders shall be permitted provided that a required means of egress stairway or ramp serves the same space at each adjoining level or where a means of egress is not required. The clear width at and below the handrails shall be not less than **20 inches**.

R311.7.12.1 Treads of ships ladders. Treads shall have a depth of not less than **5 inches**. The tread shall be projected such that the total of the tread depth plus the nosing projection is not less than **8 1/2 inches**. The riser height shall be not more than **9 1/2 inches**.

R311.7.12.2 Handrails of ships ladders. Handrails shall be provided on **both sides** of ships ladders and shall comply with Sections R311.7.8.2 to R311.7.8.4. Handrail height shall be uniform, not less **than 30 inches and not more than 34 inches.**

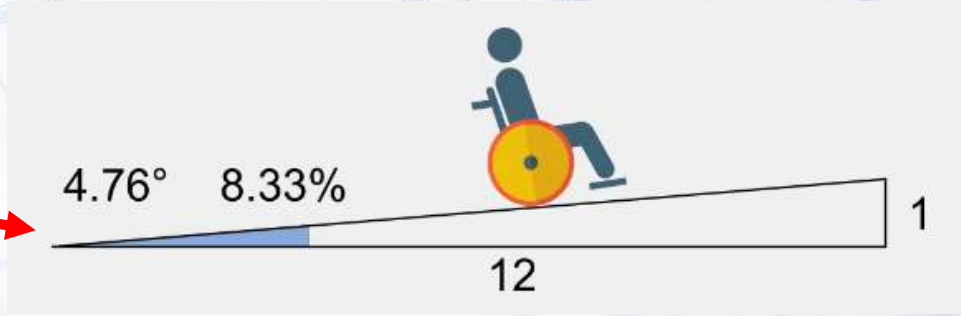


R311.8 Ramps

R311.8.1 Maximum slope. **Ramps serving the egress** door required by Section R311.2 shall have a slope of not more than **1 unit vertical in 12 units horizontal** (8.3-percent slope). **All other ramps** shall have a maximum slope of **1 unit vertical in 8 units horizontal** (12.5 percent).

Exception: Where it is **technically infeasible** to comply because of site constraints, ramps shall have a slope of not more than 1 unit vertical in 8 units horizontal (12.5 percent).

Rule is 1 unit rise vertical for 12 horizontal or 1' of rise for every 12' of horizontal run maximum



R311.8 Ramps (continued)

R311.8.2 Landings required. There shall be a floor or landing at the **top and bottom** of each ramp, where doors open onto ramps, and where ramps **change directions**. The width of the landing perpendicular to the ramp slope shall be not less than 36 inches.

R311.8.3 Handrails required. Handrails shall be provided on not less than **one side** of ramps exceeding a slope of one unit vertical in 12 units horizontal (8.33-percent slope).

R311.8.3.1 Height. Handrail height, measured above the finished surface of the ramp slope, shall be not less than **34 inches and not more than 38 inches**.

R311.8.3.2 Grip size. Handrails on ramps shall comply with Section R311.7.8.3.

R311.8.3.3 Continuity. Handrails where required on ramps shall be continuous for the **full length of the ramp**. Handrail ends shall be returned or shall terminate in newel posts or safety terminals. Handrails adjacent to a wall shall have a space of not less than **1 1/2 inches** between the wall and the handrails.

Residential Ramp

Commercial Ramp

Knowledge Check

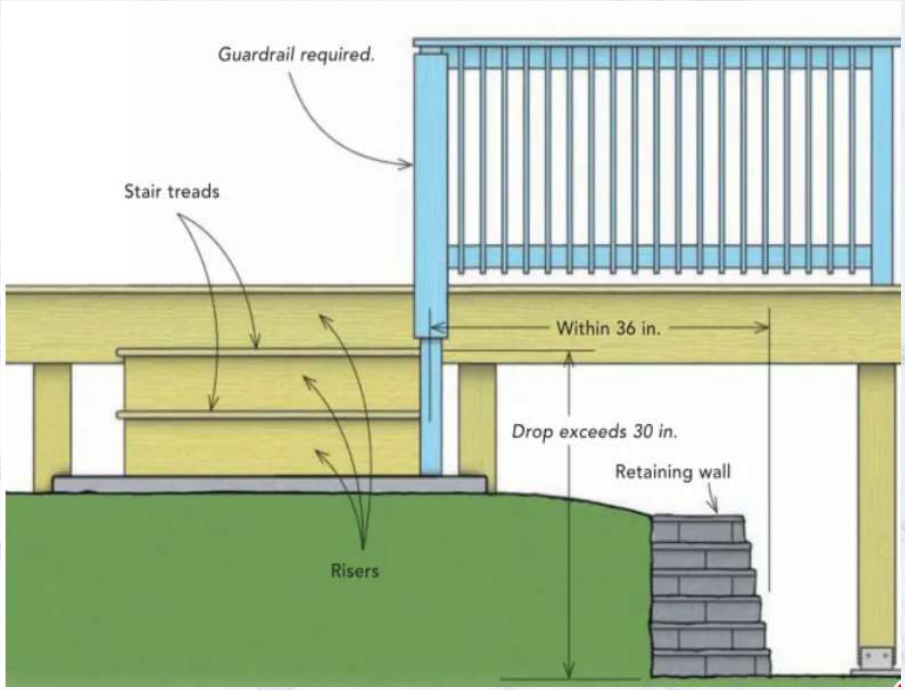
- The clearance from wall railings for gripping is _____ inches?
- Do ramps installed in one-and two- family dwellings have to meet accessibility requirements?
- What is the minimum tread depth at the walkline of a winder tread?

Section R312
Guards and Window Fall Protection

R312.1 Guards

R312.1 Guards. *Guards* shall be provided in accordance with Sections R312.1.1 through R312.1.4.

R312.1.1 Where required. *Guards* shall be located along **open-sided walking surfaces**, **including stairs, ramps and landings, that are located more than 30 inches** measured vertically to the floor or *grade* below at any point within 36 inches horizontally to the edge of the open side. Insect screening shall not be considered as a *guard*.



R312.1 Height

R312.1.2 Height. Required *guards* at open-sided walking surfaces, including stairs, porches, balconies or landings, shall be not less than **36 inches** in height as measured vertically above the adjacent walking surface or the line connecting the leading edges of the treads.

Exceptions:

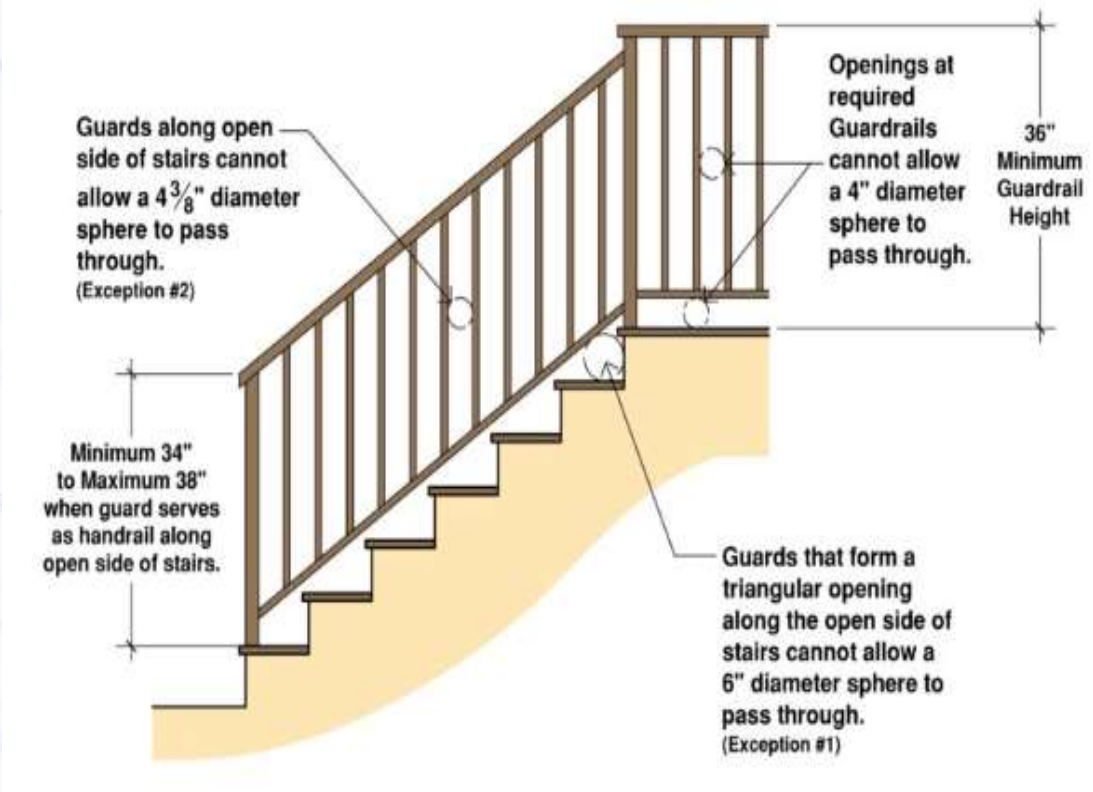
1. *Guards* on the open sides of stairs shall have a height not less than **34 inches** measured vertically from a line connecting the leading edges of the treads.
2. Where the top of the *guard* serves as a handrail on the open sides of stairs, the **top** of the *guard* shall be not less than **34 inches and not more than 38 inches** as measured vertically from a line connecting the leading edges of the treads.

R312.1.3 Opening Limitations

R312.1.3 Opening limitations. Required *guards* shall not have openings from the walking surface to the required *guard* height that allow passage of a **sphere 4 inches in diameter**.

Exceptions:

1. The triangular openings at the open side of stair, formed by the riser, tread and bottom rail of a *guard*, shall not allow passage of a **sphere 6 inches in diameter**.
2. *Guards* on the open side of stairs shall not have openings that allow passage of **a sphere 4 3/8 inches in diameter**.



Section R312
Window Fall Protection

Each year in the U.S. more than 5,000 kids and teens fall out of windows, ending up in the emergency department, according to a new study. That's 14 per day.

"Two-thirds of these injuries occurred among children younger than 5," Smith said. This is the age group that's mobile, curious and does not recognize the danger of falling from a window."

Researchers analyzed data from emergency departments from 1990 through 2008, and found an estimated 98,415 children were hurt during that time. Less than 1% lead to deaths however fatal injuries from falls may not all come into the ER's. Over the last 19 years fall injuries are down 4% and keep dropping, window fall protection playing a vital role in that reduction.

Source: Ryan Jaslow
CBSnews.com health editor
report

Section R312 Window Fall Protection

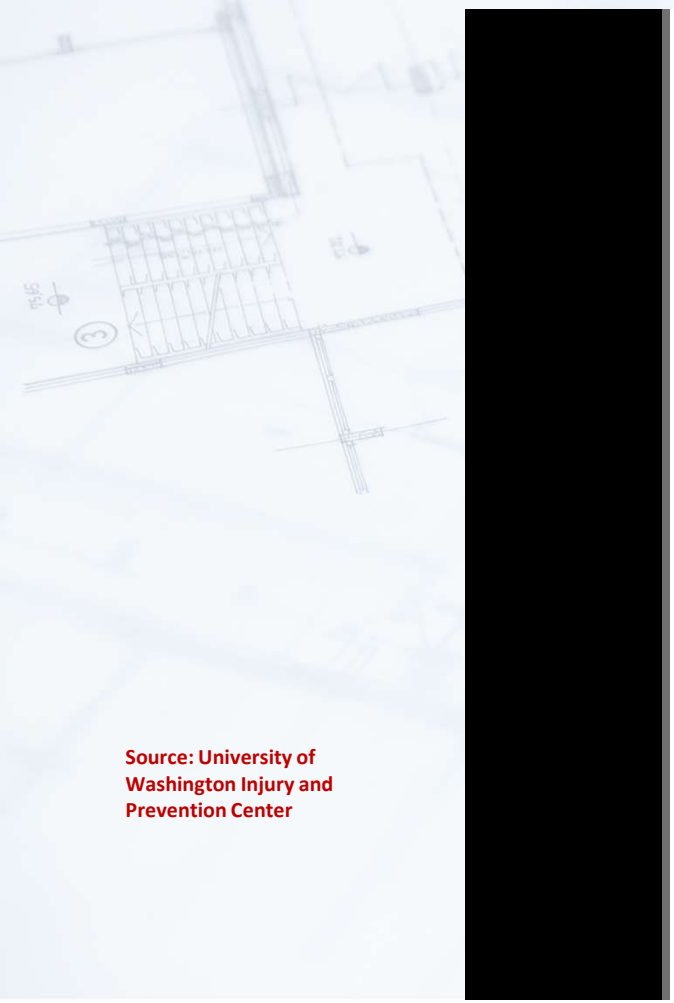
Currently in the US roughly 5,000 children a year suffer injury falls from window falls with 8-10 deaths a year attributed to the same.

Additional Stats:

1. Window falls are typically from the child's primary residence.
2. Report injuries occur mostly from single family residence and fall from 2nd or 3rd floor levels.
3. Deaths associated with falls are typically from an opening over a hard surface such as a driveway or sidewalk.
4. 1990-2008 study indicated 7.3 injuries per 100,000 children with a single year peek in 1992 of 11.8 per 100,000 and the lowest year being 1999 with a rate of 5.8 children per 100,000.
5. 58% of children were boys and 69% where below the age of 4.
6. Falls most frequently occurred from a height of two stories (62.7%), whereas 30.8% occurred from the first floor and even fewer, 6.5%, occurred from heights greater than two stories.
7. 83% of the cases the window had a screen installed in the opening.
8. When the researchers compared injuries and mortality among the 0-to-4 year old age group and the 5-to 17 year old age group, they found that the younger group was more likely to sustain head injuries, have worse outcomes, and be hospitalized or die.
9. Falls from windows were more common in spring and summer months.
10. One-fourth of the window fall-related injuries required hospitalization.

Source: Journal of pediatrics

Section R312 Window Fall Protection



Source: University of Washington Injury and Prevention Center

HARBORVIEW
INJURY PREVENTION

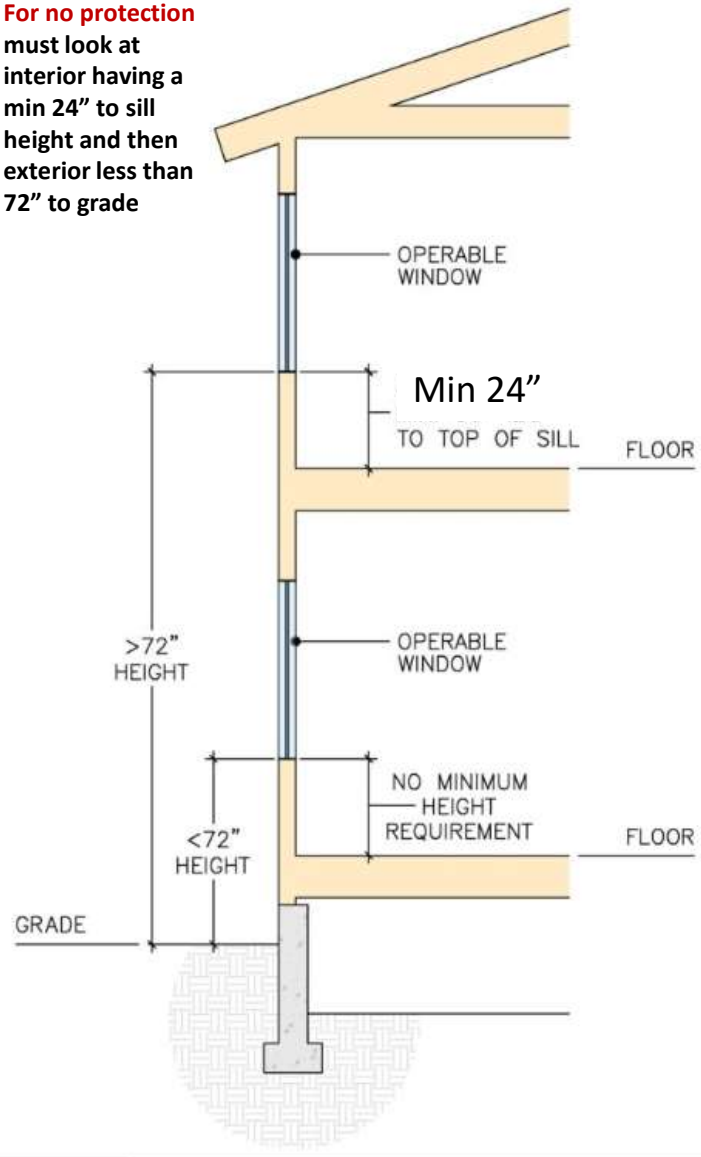
R312.2 Window fall protection

R312.2 Window fall protection. Window fall protection shall be provided in accordance with Sections R312.2.1 and R312.2.2.

R312.2.1 Window sills. In dwelling units, where the top of the sill of an operable window opening is located **less than 24 inches** above the **finished floor** and **greater than 72 inches** above the **finished *grade*** or other surface below on the exterior of the building, the operable window shall comply with one of the following:

1. Operable windows with openings that will not allow a **4-inch-diameter sphere** to pass through the opening where the opening is in its largest opened position.
2. Operable windows that are provided with window fall prevention devices that comply with **ASTM F2090**.
3. Operable windows that are provided with window opening control devices that comply with **Section R312.2.2.**

For no protection must look at interior having a min 24" to sill height and then exterior less than 72" to grade



R312.2.2 Window opening control devices

R312.2.2 Window opening control devices. Window opening control devices **shall comply with ASTM F2090.** The window opening control device, after operation to release the control device allowing the window to fully open, shall not reduce the net clear opening area of the window unit to less than the area required by **Section R310.2.1**.

What is ASTM F2090? Need to see chapter 44 for reference standards

REFERENCED STANDARDS

ASSE—continued

1060—2006	Performance Requirements for Outdoor Enclosures for Fluid-conveying Components	P2902.6.1
1061—2010	Performance Requirements for Removable and Nonremovable Push Fit Fittings	Table P2906.6
1062—2006	Performance Requirements for Temperature-actuated, Flow Reduction (TAFR) Valves for Individual Supply Fittings	Table P2701.1, P2724.2
1066—2009	Performance Requirements for Individual Pressure Balancing In-line Valves for Individual Fixture Fittings	P2722.4
1070—2004	Performance Requirements for Water-temperature-limiting Devices	P2713.3, P2721.2, P2724.1
1072—07	Performance Requirements for Barrier-type Floor Drain Trap Seal Protection Devices	P3201.2.4

ASTM

ASTM International
100 Barr Harbor Drive
West Conshohocken, PA 19428

Standard reference number	Title	Referenced in code section number
F2090—10	Specification for Window Fall Prevention Devices—with Emergency Escape (Egress) Release Mechanisms	R310.1.1, R312.2.1, R312.2.2

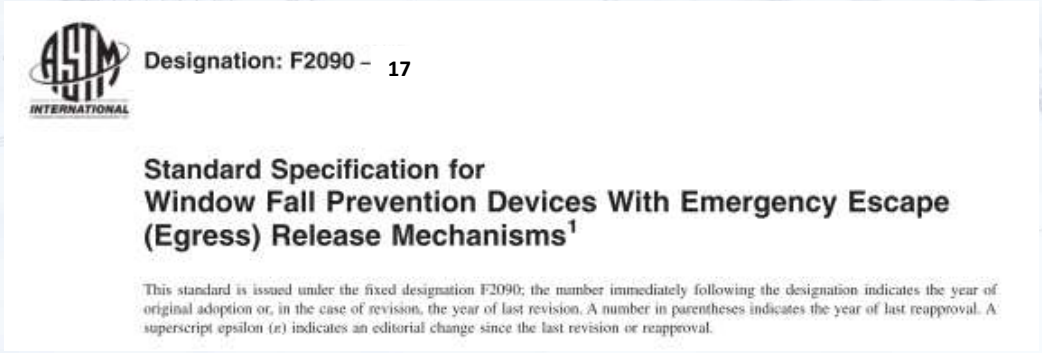
ASTM International / Full name

American Society for Testing and Materials

ASTM INTERNATIONAL

R312.2.2 Window opening control devices

What is ASTM F2090- Fall prevention devices with emergency escape release mechanisms



Designation: F2090 – 17

Standard Specification for
Window Fall Prevention Devices With Emergency Escape (Egress) Release Mechanisms[1]

This standard is issued under the fixed designation F2090; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

1. Guidelines for Structural Screens
2. Other safety devices limiting opening and have an emergency release feature
   - Requires two handed operation
   - Must rest when after usage
   - Operate in all types of weather with minimum force
   - Must be labelled to indicate how to operate and mfg of device

Knowledge Check

- Guards shall be located along open-sided walking surfaces, including stairs, ramps and landings, that are located more than _____ inches measured vertically to the floor or grade below at any point within _____ inches horizontally?
- ASTM _____ test standard applies to emergency escape release devices on windows.
- In dwelling units, where the top of the sill of an operable window opening is located less than _____ inches above the finished floor and greater than _____ inches above the finished *grade* or other surface below on the exterior of the building.

2018 NC Building Codes Amendments Effective January 1st 2023

(Administrative, Building & Residential)

Source: All Code Amendments can be found on NCDOI Website at ncdoi.gov

2018 NC Administrative Code and Policies

2018 NC Administrative Code
106.3.1 Information Required & 106.3.2 Building Code Summary. (210608 Item B-2)

106.3.1 Information required. A permit application shall be filed with the Inspection Department on a form (see Appendix A) furnished for that purpose. The Inspection Department shall make available a list of information which must be submitted with the building permit application, including a complete ~~building code summary~~ Building Code Summary (see ~~Appendix A of the Administrative Code and Policies~~ Appendix B) complying with 106.3.2.
Exception: A Building Code Summary is not required if the AHJ (Authority Having Jurisdiction) determines plan review can be performed without the Building Code Summary.

106.3.2 Building Code Summary. The ~~Inspection Department's building code summary~~ Building Code Summary used by an AHJ shall be in the exact format as, and contain only the information in, Appendix B of the Administrative Code and Polices. ~~The Inspection Department~~ An AHJ shall only modify ~~its~~ the ~~building code summary~~ Building Code Summary as set forth in Section 103.5 Modifications, or as necessary to reflect any changes by the Office of State Fire Marshal to Appendix B which have been approved by the Building Code Council.

The delayed effective date of this Rule is January 1, 2023.
The Statutory authority for Rule-making is G. S. 143-136; 143-138.

2018 NC Administrative Code and Policies

2018 NC Administrative Code
204.3.5 Design professional seal required (220315 Item B-7)

204.3.5 Design professional seal required. Where the General Statutes, North Carolina Board of Architecture and Registered Interior Designers, or the North Carolina Board of Examiners for Engineers and Land Surveyors require, no permit shall be issued unless the construction documents (drawings and specifications), bear the North Carolina seal of a ~~registered design professional~~ *registered design professional*. ~~Construction documents~~ *Construction documents* shall include the name and address of the business entity (individual, corporation, or partnership) with whom the registered design professional is affiliated. Questions concerning this section should be directed to the North Carolina Board of Architecture and Registered Interior Designers or the North Carolina Board of Examiners for Engineers and Land Surveyors.

~~**Exceptions:** For permitting purposes, the seal of a registered design professional is not required when the building, structure or project involved is in one of the categories listed below, unless otherwise required pursuant to the provisions of the General Statutes or the technical codes:~~

~~1. A family residence, up to eight units attached with grade-level exit, which is not a part of or physically connected with any other buildings or residential units;~~

~~2. A building upon any farm that is for the use of any farmer, unless the building is of such nature and intended for such use as to substantially involve the health or safety of the public;~~

~~3. An institutional or commercial building if it does not have a total cost of construction exceeding $90,000;~~

~~4. An institutional or commercial building if the total building area does not exceed 2,500 square feet (2.32 m2) in gross floor area;~~

~~5. Alteration, remodeling or renovation of an existing building that is exempt under this section, or alteration, remodeling or renovation of an existing building or building site that does not alter or affect the structural system of the building; change the building's access or exit pattern; or change the live or dead load on the building's structural system. This subdivision shall not limit or change any other exemptions to this chapter or to the practice of engineering under Chapter 89C of the General Statutes.~~

~~6. The preparation and use of details and shop drawings, assembly or erection drawings, or graphic descriptions utilized to detail or illustrate a portion of the work required to construct the project in accordance with the plans and specifications prepared or to be prepared under the requirements or exemptions of this chapter.~~

~~7. Nothing in this chapter shall be construed to prevent any individual from making plans or data for buildings for himself or herself. This exemption does not apply to plans for places of religious worship.~~

(General Statute 83A-10 and 83A-13)

The delayed effective date of this Rule is January 1, 2023.
The Statutory authority for Rule-making is G. S. 143-136; 143-138.

2018 NC Building Code

2018 NC Building Code
Section 116 Unsafe Structures and Equipment (210914 Item B-2)

SECTION 116 UNSAFE STRUCURES AND EQUIPMENT

~~Deleted. See the North Carolina Administrative Code and Policies~~

116.1 General. Owners of unsafe structures or equipment shall comply with a code enforcement official's authority as described in NC Administrative Code and Policies Section 204.2.8 and G.S. 160D-1119.
116.2 Public access. The structure owner or his representative shall secure the unsafe structure by a method *approved* by the local *building official* to prevent public access. The *approved* method shall be in place within the time limit specified in writing by the *building official* in the notice of unsafe building.

The delayed effective date of this Rule is January 1, 2023.
The Statutory authority for Rule-making is G. S. 143-136; 143-138.

2018 NC Building Code

2018 NC Building Code
3006.2 Hoistway opening protection required (210914 Item B-3)

3006.2 Hoistway opening protection required. Elevator hoistway door openings for occupied and unoccupied stories shall be protected in accordance with Section 3006.3 where an elevator hoistway connects more than three *stories*, is required to be enclosed within a *shaft enclosure* in accordance with Section 712.1.1 and any of the following conditions apply:

1. The building is not protected throughout with an *automatic sprinkler system* in accordance with Section 903.3.1.1 or 903.3.1.2.
2. The building contains a Group I-1, Condition 2 occupancy.
3. The building contains a Group I-2 occupancy.
4. The building contains a Group I-3 occupancy.
5. The building is a high rise and the elevator hoistway is more than 75 feet (22 860 mm) in height. The height of the hoistway shall be measured from the *lowest floor* to the highest floor of the floors served by the hoistway.

Exceptions:

1. Protection of elevator hoistway door openings is not required where the elevator serves only *open parking garages* in accordance with Section 406.5.
2. Protection of elevator hoistway door openings is not required at the level(s) of *exit discharge*, provided that the level(s) of *exit discharge* is equipped with an *automatic sprinkler system* in accordance with Section 903.3.1.1.
3. Enclosed elevator lobbies and protection of elevator hoistway door openings are not required on levels where the elevator hoistway opens to the exterior.

The delayed effective date of this Rule is January 1, 2023.
The Statutory authority for Rule-making is G. S. 143-136; 143-138.

2018 NC Building Code

2018 NC Building Code
3006.3 Hoistway opening protection (210914 Item B-4)

3006.3 Hoistway opening protection. Where Section 3006.2 requires protection of the elevator hoistway door opening, the protection shall be provided by one of the following:

1. An enclosed elevator lobby shall be provided at each floor to separate the elevator hoistway *shaft enclosure* doors from each floor by fire partitions in accordance with Section 708. In addition, doors protecting openings in the elevator lobby enclosure walls shall comply with Section 716.5.3 as required for *corridor* walls. Penetrations of the enclosed elevator lobby by ducts and air transfer openings shall be protected as required for *corridors* in accordance with Section 717.5.4.1.

2. An enclosed elevator lobby shall be provided at each floor to separate the elevator hoistway *shaft enclosure* doors from each floor by smoke partitions in accordance with Section 710 where the building is equipped throughout with an *automatic sprinkler system* installed in accordance with Section 903.3.1.1 or 903.3.1.2. In addition, doors protecting openings in the *smoke partitions* shall comply with Sections 710.5.2.2, 710.5.2.3 and 716.5.9. Penetrations of the enclosed elevator lobby by ducts and air transfer openings shall be protected as required for *corridors* in accordance with Section 717.5.4.1.

3. Additional doors shall be provided at each elevator hoistway door opening in accordance with Section 3002.6. Such door shall comply with the smoke and draft control door assembly requirements in Section 716.5.3.1 when tested in accordance with UL 1784 without an artificial bottom seal and contain a vision panel as allowed by Table 716.5. The door shall not be installed in a way that affects the fire-resistance-rating or operation of the normal elevator shaft doors.

4. The elevator hoistway shall be pressurized in accordance with Section 909.21.

The delayed effective date of this Rule is January 1, 2023.
The Statutory authority for Rule-making is G. S. 143-136; 143-138.

2018 NC Residential Building Code

2018 NC Residential Code
R302.2 R313.1 & R202 Townhouses. (210608 Item B-7)

[RB] DWELLING. Any building that contains one or two *dwelling units* (duplex) on the same parcel of land, used, intended, or designed to be built, used, rented, leased, let or hired out to be occupied, or that are occupied for living purposes.
[RB] DWELLING UNIT. A single unit providing complete independent living facilities for *a single family* ~~one or more persons~~, including permanent provisions for living, sleeping, eating, cooking and sanitation.

The delayed effective date of this Rule is January 1, 2023.
The Statutory authority for Rule-making is G. S. 143-136; 143-138.

2018 NC Residential Building Code

2018 NC Residential Code
Appendix Q Tiny Houses & R328 Lofts. (210608 Item B-8)
Replaces "180612 Item B-12" below for "Landing Platform" and "Loft" definitions

~~**LANDING PLATFORM.** A landing provided as the top step of a *stairway* accessing a *loft*.~~

~~**LOFT.** A floor level located more than 30 inches (762 mm) above the main floor and open to it on at least one side with a *ceiling height* of less than 6 feet 8 inches (2032 mm), used as a living or sleeping space.~~

The delayed effective date of this Rule is January 1, 2023.
The Statutory authority for Rule-making is G. S. 143-136; 143-138.

2018 NC Residential Building Code

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The delayed effective date of this Rule is January 1, 2023.
The Statutory authority for Rule-making is G. S. 143-136; 143-138.

2018 NC Residential Building Code

2018 NC Residential Code
R302.2 R313.1 & R202 Townhouses. (210608 Item B-7)

[RB] TOWNHOUSE. A single-family *dwelling unit* constructed in a group of two ~~three~~ or more attached units separated by property lines in which each unit extends from foundation to roof and with a *yard* or *public way* on not less than two sides.

The delayed effective date of this Rule is January 1, 2023.
The Statutory authority for Rule-making is G. S. 143-136; 143-138.

2018 NC Residential Code
R202 DEFINITIONS (220315 Item B-4)

TOWNHOUSE. A single-family *dwelling unit* constructed in a group of two or more attached units separated by property lines or assumed property lines based on the location of the double wall or common wall in which each unit extends from foundation to roof and with yard or public way on not less than two sides.

The delayed effective date of this Rule is January 1, 2025.
The Statutory authority for Rule-making is G. S. 143-136; 143-138.

2018 NC Residential Building Code

2018 NC Residential Code
R302.2 R313.1 & R202 Townhouses. (210608 Item B-7)

R302.2 Townhouses. Each *townhouse* shall be considered a separate building and shall be separated by fire-resistance rated wall assemblies meeting the requirements of Section ~~R302.1 for exterior walls.~~ R302.2.1 or R302.2.2.

~~**Exception:** If an automatic residential fire sprinkler is installed, a common 1-hour fire-resistance-rated wall assembly tested in accordance with ASTM E119 or UL263 is permitted for townhouses if such walls do not contain~~
~~plumbing or mechanical equipment, *ducts* or *vents* in the cavity of the common wall. The wall shall be rated for fire exposure from both sides and shall extend to and be tight against exterior wall sheathing and the underside of the roof sheathing. Electrical installations shall be installed in accordance with Section R302.4.~~

R302.2.1 Double walls. Each *townhouse* shall be separated by two 1-hour fire resistance-rated wall assemblies
tested in accordance with ASTM E119, UL263 or Section 703.3 of the 2018 NC Building Code.

R302.2.2 Common Walls. Common walls separating *townhouses* shall be assigned a fire-resistance rating in accordance with Item #1 or 2. The common wall shared by two *townhouses* shall be constructed without plumbing or mechanical equipment, *ducts* or *vents* in the cavity of the common wall. The wall shall be rated for fire exposure from both sides and shall extend to and be tight against exterior walls and the underside of the roof sheathing. Electrical installations shall be in accordance with Chapters 34 through 43. Penetrations of the membrane of common walls for electrical outlet boxes shall be in accordance with Section R302. 4.

1. Where a fire sprinkler system in accordance with Section P2904 is provided, the common wall shall be not less than a 1-hour fire-resistance-rated wall assembly tested in accordance with ASTM E119, UL 263 or Section 703.3 of the 2018 NC Building Code.
2. Where a fire sprinkler system in accordance with Section P2904 is not provided, the common wall shall be not less than a 2-hour fire-resistance-rated wall assembly tested in accordance with ASTM E119, UL 263 or Section 703.3 of the 2018 NC Building Code.

R302.2.5 Townhouse eave protection. In *townhouse* construction ~~(with three or more attached dwellings)~~ projections extending into the *fire separation distance* shall have not less than 1-hour fire resistive construction on the underside. Soffit material beyond the *fire separation distance* shall be securely attached to framing members and shall be constructed using either noncombustible soffit material; fire-retardant-treated soffit material; vinyl soffit installed over 3/4-inch (19 mm) wood sheathing or 5/8-inch (15.9 mm) gypsum board; or aluminum soffit installed over 3/4-inch (19 mm) wood sheathing or 5/8-inch (15.9mm) gypsum board. Venting requirements shall be provided in both soffit and underlayments. Vents shall be either nominal 2-inch (51 mm) continuous or equivalent intermittent and shall not exceed the minimum net free air requirements established in Section R806.2 by more than 50 percent. Vents in soffit are not allowed within 4 feet (1219 mm) of fire walls or property lines.

The delayed effective date of this Rule is January 1, 2023.
The Statutory authority for Rule-making is G. S. 143-136; 143-138.

2018 NC Residential Building Code

2018 NC Residential Code
Appendix Q Tiny Houses & R328 Lofts. (210608 Item B-8)
Replaces "180612 Item B-12" below.

R305.1 Minimum height. *Habitable space*, hallways and portions of *basements* containing these spaces shall have a ceiling *height* of not less than 7 feet (2134 mm). *Bathrooms*, *toilet rooms* and laundry rooms shall have a *ceiling height* of not less than 6 feet 8 inches (2032 mm).

Exceptions:

1. For rooms with sloped ceilings, the required floor area of the room shall have a *ceiling height* of not less than 5 feet (1524 mm) and not less than 50 percent of the required floor area shall have a *ceiling height* of not less than 7 feet (2134 mm).
2. The *ceiling height* above bathroom and toilet room fixtures shall be such that the fixture is capable of being used for its intended purpose. A shower or tub equipped with a showerhead shall have a *ceiling height* of not less than 6 feet 8 inches (2032 mm) above an area of not less than 30 inches (762 mm) by 30 inches (762 mm) at the showerhead.
3. Beams, girders, *ducts* or other obstructions in *habitable space* shall be permitted to project to within 6 feet 4 inches (1931 mm) of the finished floor.
~~4. *Ceiling heights* in *lofts* are permitted to be less than 6 feet 8 inches.~~

The delayed effective date of this Rule is January 1, 2023.
The Statutory authority for Rule-making is G. S. 143-136; 143-138.

2018 NC Residential Building Code

2018 NC Residential Code
R302.2 R313.1 & R202 Townhouses. (210608 Item B-7)

R313.1 Townhouse automatic fire sprinkler systems. (Deleted)
~~An automatic residential fire sprinkler system shall be installed in *townhouses*.~~
~~**Exceptions:**~~
~~1. Townhouses constructed with a common 2-hour fire-resistance-rated wall assembly tested in accordance with ASTM E119 or UL 263, provided such walls do not contain plumbing or mechanical equipment, *ducts* or *vents* in the cavity of the common wall. The wall shall be rated for fire exposure from both sides and shall extend to and be tight against exterior wall sheathing and the underside of the roof sheathing. Electrical installations shall be installed in accordance with the *North Carolina Electrical Code*. Penetrations for electrical outlet boxes shall be in accordance with Section R302.4.~~
~~2. An automatic residential fire sprinkler system shall not be required where *additions* or *alterations* are made to existing *townhouses* that do not have an automatic residential fire sprinkler system installed~~

The delayed effective date of this Rule is January 1, 2023.
The Statutory authority for Rule-making is G. S. 143-136; 143-138.

2018 NC Residential Building Code

2018 NC Residential Code
R4602 Definitions & R4606 Fastener Corrosion Resistance. (210608 Item B-9)

SECTION R4602 DEFINITIONS

COASTAL HIGH HAZARD AREA. ~~An area subject to coastal flooding and high velocity waters including storm wave wash, as shown by Federal Emergency Management Agency Maps and subject to the approval of the Building Code Council.~~ An area of special flood hazard extending from offshore to the inland limit of a primary frontal dune along an open coast and any other area subject to high velocity wave action from storms or seismic sources. The coastal high hazard area is identified as either V Zone or Coastal A Zone on Flood Insurance Rate Maps (FIRMs).

CORROSION RESISTANCE AREA. Areas within hurricane prone regions defined as that area east of the Intracoastal Waterway from the NC/SC state line north to Beaufort Inlet and from that point to include the barrier islands to the NC/VA state line.

OCEAN HAZARD AREA. An area, as identified by the North Carolina Coastal Resources Commission, ~~and subject to approval by the Building Code Council,~~ near the shoreline of the Atlantic Ocean that has been identified as subject to at least one of the following hazards: (A) Historical or predicted future trends of long-term erosion, (B) erosion expected to occur during a coastal storm reaching the base flood elevation, or (C) shoreline fluctuations due to tidal inlets.

The delayed effective date of this Rule is January 1, 2023.
The Statutory authority for Rule-making is G. S. 143-136; 143-138.

2018 NC Residential Building Code

2018 NC Residential Code
R4602 Definitions & R4606 Fastener Corrosion Resistance. (210608 Item B-9)

SECTION R4606 FASTENER CORROSION RESISTANCE

~~R4605.5~~ R4606.1 Fastener corrosion resistance.
In the *Coastal High Hazard Area*, the *Corrosion Resistance Area* and the *Ocean Hazard Area*, all metal connectors and fasteners outside of *conditioned spaces* shall be hot-dip galvanized steel after fabrication and meet ASTM A 153. Exposed metal connectors, such as tie-down straps on porches, decks, and areas under the structure, shall be a minimum 3/16-inch (5 mm) thick, and shall be hot-dip galvanized after fabrication and meet ASTM A 123 or ASTM A 153. Stainless steel light-gage metal connectors shall be permitted in exposed or partially exposed locations. Metal connectors of approved equivalent corrosion-resistant material are permitted to be accepted. See Table ~~R4605.5~~ R4606.1.

TABLE ~~R4605.5~~[a] R4606.1[a]
CORROSION RESISTANCE

	OPEN (exterior, porches, under house)	**EXPOSURE LEVEL VENTED/ENCLOSED (attic, floor trusses, enclosed crawl spaces and stud cavity)**	**CONDITIONED (heated/cooled living areas)**
Nails, staples, screws	Hot-dip galvanized	Hot-dip galvanized	-
Nuts, bolts, washers, tie rods	Hot-dip galvanized	Hot-dip galvanized	-
Steel connection plates & straps (3/16″ minimum thickness)	Hot-dip galvanized after fabrication	Hot-dip galvanized	-
Sheet metal connectors, wind anchors, joists hangers, steel joists and beams	Stainless steel or hot-dipped galvanized after fabrication	Hot-dip galvanized after plate fabrication or triple galvanized[b]	Hot-dip galvanized or triple galvanized[b]
Truss plates	Stainless steel or hot-dipped galvanized after fabrication	Hot-dip galvanized after fabrication, stainless steel, triple galvanized[b] or in accordance with TPI-1 of the Truss Plate Institute within 6′-0″ of a gable louver, ridge or soffit vent. Otherwise, standard galvanized[b]	Standard galvanized

a. Applies only to structures located in *Coastal High Hazard Area*, *Corrosion Resistance Area* and *Ocean High Hazard Area*.
b. Triple galvanizing – G185, standard galvanizing – G60, both per ASTM A 653 / A 653M.

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~~R4605.6~~ R4605.5 **Building anchorage.**

1. For masonry buildings, the roof structure, including rafters and joists, shall be anchored to the wall in accordance with Section R606.11. All mortar used for masonry walls shall be Type M or S.

2. For masonry or wood frame buildings, all sills, beams or girders which resist uplift (including interior sills, beams, girders, and joists where the perimeter is unenclosed) shall be anchored to the footing in accordance with Section R4504. Footing dowel bars shall have an 8-inch (203 mm) hook.

3. Where wood partitions and masonry walls join, the stud abutting the masonry shall be double and bolted to the masonry with three 1/2-inch (13 mm) galvanized bolts.

4. Steel and wooden columns and posts, including porch columns, shall be anchored with metal ties and bolts to their foundations and to the members that they support.

~~R4605.7~~ R4605.6 **Insulation.** Insulation installed in floors in exposed areas under buildings elevated on pilings shall be held in place with plywood with exterior glue or other material approved by the *code official*.

~~R4605.8~~ R4605.7 **Accessory structures.** Detached accessory structures and out buildings shall be bolted to their foundation or otherwise constructed so as to prevent overturning.

The delayed effective date of this Rule is January 1, 2023.
The Statutory authority for Rule-making is G. S. 143-136; 143-138.

2018 NC Residential Building Code

Tiny Homes- 7 Sections

- General Req.
- Definitions
- Lofts
- Means of Egress
- Emergency Escape and Rescue
- Smoke & CO Detectors
- Foundation

2018 NC Residential Code
Appendix Q Tiny Houses & R328 Lofts. (210608 Item B-8)

APPENDIX Q TINY HOUSES
The provisions contained in this appendix are adopted as part of this code.

SECTION AQ101 GENERAL

AQ101.1 Scope. This appendix shall be applicable to *tiny houses* used as single *dwelling unit*. *Tiny houses* shall comply with this code except as otherwise stated in this appendix.

SECTION AQ102 DEFINITIONS

AQ102.1 General. The following words and terms shall, for the purposes of this appendix, have the meanings shown herein. Refer to Chapter 2 of this code for general definitions.
LANDING PLATFORM. A landing provided as the top step of a *stairway* accessing a *loft*.
HABITABLE LOFT. A floor level located more than 30 inches above the main floor and open to the main floor on one or more sides with a ceiling height of less than 6 feet 8 inches and used as a living or sleeping space.
TINY HOUSE. A *dwelling* that is 400 square feet or less in floor area excluding *lofts*.

SECTION AQ103 LOFTS

AQ103.1 General. *Lofts* used as a sleeping or living space shall meet the minimum area and dimension requirements of Sections AQ103.1.1 through AQ103.1.4.

AQ103.1.1 Minimum area. *Lofts* shall have a floor area of not less than 35 square feet.

AQ103.1.2 Minimum dimensions. *Lofts* shall be not less than 5 feet in any horizontal dimension.

AQ103.1.3 Minimum ceiling height. *Habitable space* and hallways in *tiny houses* shall have a *ceiling height* of not less than 6 feet 8 inches. *Bathrooms*, *toilet rooms* and *kitchens* shall have a *ceiling height* of not less than 6 feet 4 inches. Obstructions including, but not limited to, beams, girders, *ducts* and lighting, shall not extend below these minimum *ceiling heights*.
Exception: *Ceiling heights* in *lofts* are permitted to be less than 6 feet 8 inches.

AQ104.1.4 Height effect on loft area. Portions of a *loft* with a sloped ceiling measuring less than 3 feet from the finished floor to the finished ceiling shall not be considered as contributing to the minimum required area for the loft.
Exception: Under gable roofs with a minimum slope of 6 units vertical in 12 units horizontal (50-percent slope), portions of a *loft* with a sloped ceiling measuring less than 16 inches from the finished floor to the finished ceiling shall not be considered as contributing to the minimum required area for the *loft*.

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SECTION AQ104 MEANS OF EGRESS

AQ104.1 Loft access. The access to and primary egress from *lofts* shall be of any type described in Sections AQ104.2.1 through AQ104.2.4.

AQ104.2.1 Stairways. *Stairways* accessing *lofts* shall comply with this code or with Sections AQ104.2.1.1 through AQ104.2.1.5.

AQ104.2.1.1 Width. *Stairways* accessing a *loft* shall not be less than 20 inches in clear width including *handrail*.

AQ104.2.1.2 Headroom. The headroom in *stairways* accessing a *loft* shall be not less than 6 feet 2 inches, as measured vertically, from a sloped line connecting the tread or *landing platform nosing* in the middle of their width.

AQ104.2.1.3 Treads and risers. *Risers* for *stairs* accessing a *loft* shall be a maximum of 12 inches in height and every *riser* shall be uniform within a tolerance of ¾". Tread depth shall be a minimum 12" with all treads uniform within a tolerance ¾".

AQ104.2.1.4 Landing platforms. The top tread and *riser* of *stairways* accessing *lofts* shall be constructed as a *landing platform* where the *loft ceiling height* is less than 6 feet 2 inches where the *stairway* meets the *loft*. The *landing platform* shall be the width of the *stairs* with a minimum depth of 18" inches measured from the *nosing* of the *landing platform* to the edge of the *loft*, and 16 to 18 inches in height measured from the *landing platform* to the *loft* floor.

AQ104.2.1.5 Handrails. *Handrails* shall comply with Section R311.7.8.

AQ104.2.1.6 Stairway guards. *Guards* at open sides of *stairways* shall comply with Section R312.1.

AQ104.2.2 Ladders. Non-removable ladders accessing *lofts* shall comply with Sections AQ104.2.2.1.
Exception: Ladders that slide out away from the *loft* opening that are within reach of the *loft* occupant.

AQ104.2.2.1 Size and capacity. Ladders accessing *lofts* shall have a rung width of not less than 12 inches, and no more than 18-inches spacing between rungs. Ladders shall be capable of supporting a 200-pound load on any rung. Rung spacing shall be uniform within 3/8 inch.

AQ104.2.3 Ship's ladders. Ship's ladders accessing *lofts* shall be installed at 70 to 80 degrees from horizontal and are permitted to be used as an element of a means of egress from *lofts*. *Ship ladders* shall comply with Sections R311.7.12.

AQ104.2.4 Loft Guards. *Loft guards* complying with R312.1 shall be located along the open side of *lofts*. *Loft guards* shall be not less than 36 inches in height or one-half of the clear height to the ceiling, whichever is less.

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SECTION AQ105 EMERGENCY ESCAPE AND RESCUE

AS105.1 Emergency Escape and Rescue. *Tiny houses* and their *lofts* shall meet the requirements of Section R310 for emergency escape and rescue openings.

SECTION AQ106 SMOKE AND CARBON MONOXIDE DETECTORS

AQ106.1 Smoke and Carbon monoxide detectors. Smoke and carbon monoxide detectors shall be installed as required in Sections R314 and R315 and just below the highest point of any *loft*.

SECTION AQ107 FOUNDATION

AQ107.1 Foundation options. *Tiny Houses* are permitted to be constructed without a masonry or concrete foundation per Section AQ107.1.1 and AQ107.1.2, except in *coastal high hazard, ocean hazard* and *flood hazard areas.*

AQ107.1.1 Wood Foundation. The building shall be supported on a wood foundation of minimum 4-inch by 4-inch or 6-inch by 6-inch mudsill or runner of approved wood in accordance with Section R317. Structural floor systems that include joists and subfloor material shall also comply with Section R317.1, item #1.

AQ107.1.2. Anchorage. *Tiny houses* with wood foundations per AQ107.1.1 shall be designed and anchored to resist overturning and sliding.
Exception: *Tiny houses* with no more than 12' vertical mean roof height shall be anchored to resist overturning and sliding by installing a minimum of one ground anchor at each corner of the building. The total resisting force of the anchors shall be equal to 20psf (958 Pa) times the plan area of the building.

The delayed effective date of this Rule is January 1, 2023.
The Statutory authority for Rule-making is G. S. 143-136; 143-138.

Questions?

Thank You!