

STAIRBUILDERS AND MANUFACTURERS ASSOCIATION

Lunch and Learn

THE CODE AND YOU!

WEDNESDAY, SEPTEMBER 9TH
12:30 PM ET
VIA ZOOM





The Code and You Codes for Tomorrow

Clearly Understood, Purposeful Regulation, Design Freedom!

Dave Cooper, SMA Code Development Representative



Code Adoption

Status Quo

- ▶ Most jurisdictions in the US are using the 2015 IRC and IBC Codes
- ▶ Most jurisdictions using the 2015 are reviewing the 2018 Codes for adoption
- ▶ 12 state jurisdictions have already adopted the 2018 Codes

Code Adoption

Status Quo

- ▶ The 2021 code development cycle was completed in 2019 and will be published fall of 2020.
- ▶ Some jurisdictions will begin reviewing the 2021 codes for adoption in early 2021.
- ▶ Development of the 2024 ICC Model Codes will begin January 2021

2021 IBC Significant Changes

1011.5.2 Riser height and tread depth. *Stair* riser heights shall be 7 inches (178 mm) maximum and 4 inches (102 mm) minimum. The riser height shall be measured vertically between the *nosings* of adjacent treads or between the stairway landing and the adjacent tread.

2021 IBC Significant Changes

1011.6 Stairway landings. There shall be a floor or landing at the top and bottom of each *stairway*. The width of landings, measured perpendicularly to the direction of travel, shall be not less than the width of *stairways* served. Every landing shall have a minimum depth, measured parallel to the direction of travel, equal to the width of the *stairway* or 48 inches (1219 mm), whichever is less. Doors opening onto a landing shall not reduce the landing to less than one-half the required width. When fully open, the door shall not project more than 7 inches (178 mm) into the required width of a landing. Where *wheelchair spaces* are required on the *stairway* landing in accordance with Section 1009.6.3, the *wheelchair space* shall not be located in the required width of the landing and doors shall not swing over the *wheelchair spaces*.

~~Exception~~ Exceptions:

1. Where *stairways* connect stepped *aisles* to cross *aisles* or concourses, *stairway* landings are not required at the transition between *stairways* and stepped *aisles* constructed in accordance with Section ~~1029~~ 1030.
2. Where curved stairways of constant radius have intermediate landings, the landing depth shall be measured horizontally between the intersection of the walkline of the lower flight at the landing nosing and the intersection of the walkline of the upper flight at the nosing of the lowest tread of the upper flight.
3. Where a landing turns 90 degrees (1.57 rad) or more, the minimum landing depth in accordance with this section shall not be required where the landing provided is not less than that described by an arc with a radius equal to the width of the flight served

2021 IRC Significant Changes

[RB] STAIRWAY. One or more flights of stairs, either interior or exterior, with the necessary landings and connecting platforms to form a continuous and uninterrupted passage from one level to another ~~within or attached to a building, porch or deck.~~

R311.7 Stairways. Where required by this code or provided, stairways shall comply with this section.

Exceptions:

1. Stairways not within or serving a building, porch or deck.
2. Stairways leading to non-habitable attics.
3. Stairways leading to crawl spaces.

R311.8 Ramps. Where required by this code or provided, ramps shall comply with this section.

Exception: Ramps not within or serving a building, porch or deck

2021 IRC Significant Changes

R311.7.5.1 Risers. The riser height shall be not more than $7\frac{3}{4}$ inches (196 mm). The riser height 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 $\frac{3}{8}$ inch (9.5 mm). Risers shall be vertical or sloped from the underside of the nosing of the tread above ~~at an angle not more than 30 degrees (0.51 rad) from the vertical~~. At open risers, openings located more than 30 inches (762 mm), as measured vertically, to the floor or grade below shall not permit the passage of a 4-inch-diameter (102 mm) sphere.

Exceptions:

1. The opening between adjacent treads is not limited on spiral stairways.
2. The riser height of spiral stairways shall be in accordance with Section R311.7.10.1.

2021 IRC Significant Changes

R311.7.8.4 Continuity. Handrails 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 toward a wall, guard walking surface continuous to itself, or ~~shall terminate to a post in newel posts or safety terminals.~~

Exceptions:

1. Handrail continuity shall be permitted to be interrupted by a newel post at a turn in a flight with winders, at a landing, or over the lowest tread.
2. A volute, turnout or starting easing shall be allowed to terminate over the lowest tread and over the top landing.

2021 IRC Significant Changes

R312.1.1 Where required. *Guards* shall be provided for those portions of open-sided walking surfaces, including floors, stairs, ramps and landings,—that are located more than 30 inches (762 mm) measured vertically to the floor or *grade* below at any point within 36 inches (914 mm) horizontally to the edge of the open side. Insect screening shall not be considered as a *guard*.

Code **Development** a Consensus Process

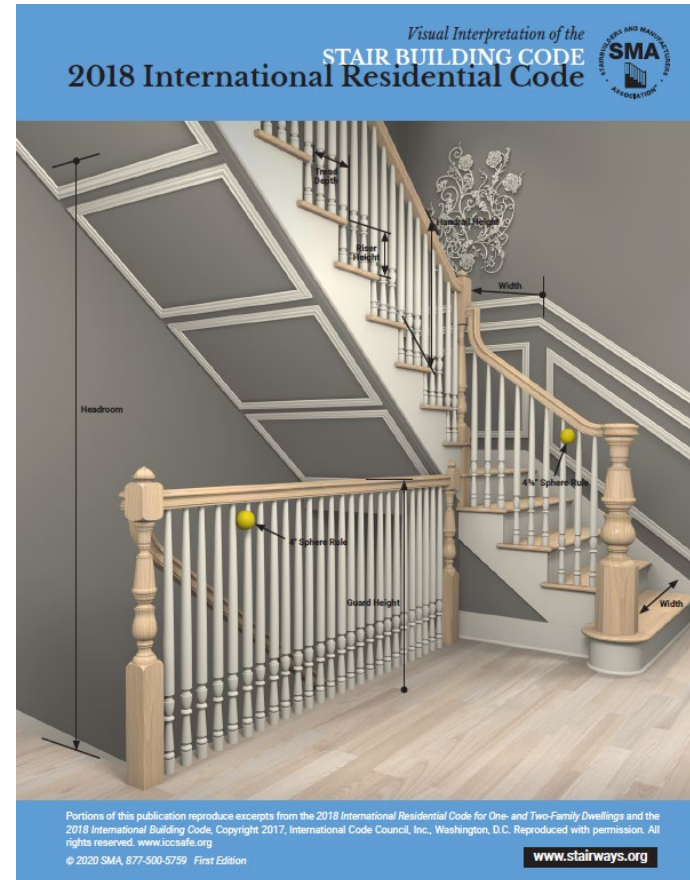
Any and All may Participate

Same Process in Different Years - IBC 2021 and IRC 2022

- ▶ Spring Code Development Hearing, CDH – Proposed changes heard by committee.
 - Result is committee recommendation
- ▶ Fall Public Comment Hearing, PCH – Public Comments heard by Voting members
 - Result of floor ballot, and video testimony is published
 - Online Government Consensus vote – all governmental voting members
 - Final action published following report of verification committee and board approval.

Code Interpretation

- ▶ SMA Visual Interpretations of the 2018 and 2015 Codes are now available at member discount prices. Place your order and deliver copies to your local building departments.



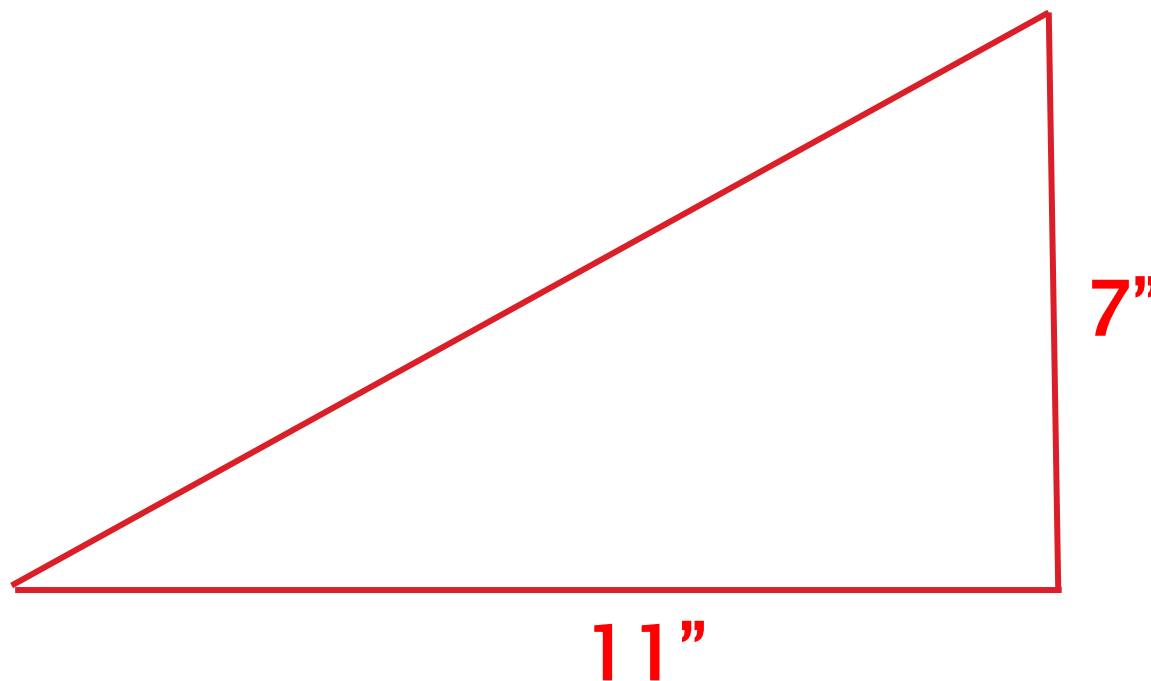
Code Development Schedule

- ▶ 2024 IBC, International Building Code – 2021
 - Includes all buildings, including all types of residential occupancies
 - Stairways are covered in Chapter 10 - Means of Egress
- ▶ 2024 IRC, International Residential Code – 2022
 - Includes only One and Two Family Dwellings no more than three stories
- ▶ ICC / A117.1 Accessible and Useable Buildings and Facilities
 - Currently organizing review process to begin Spring 2021

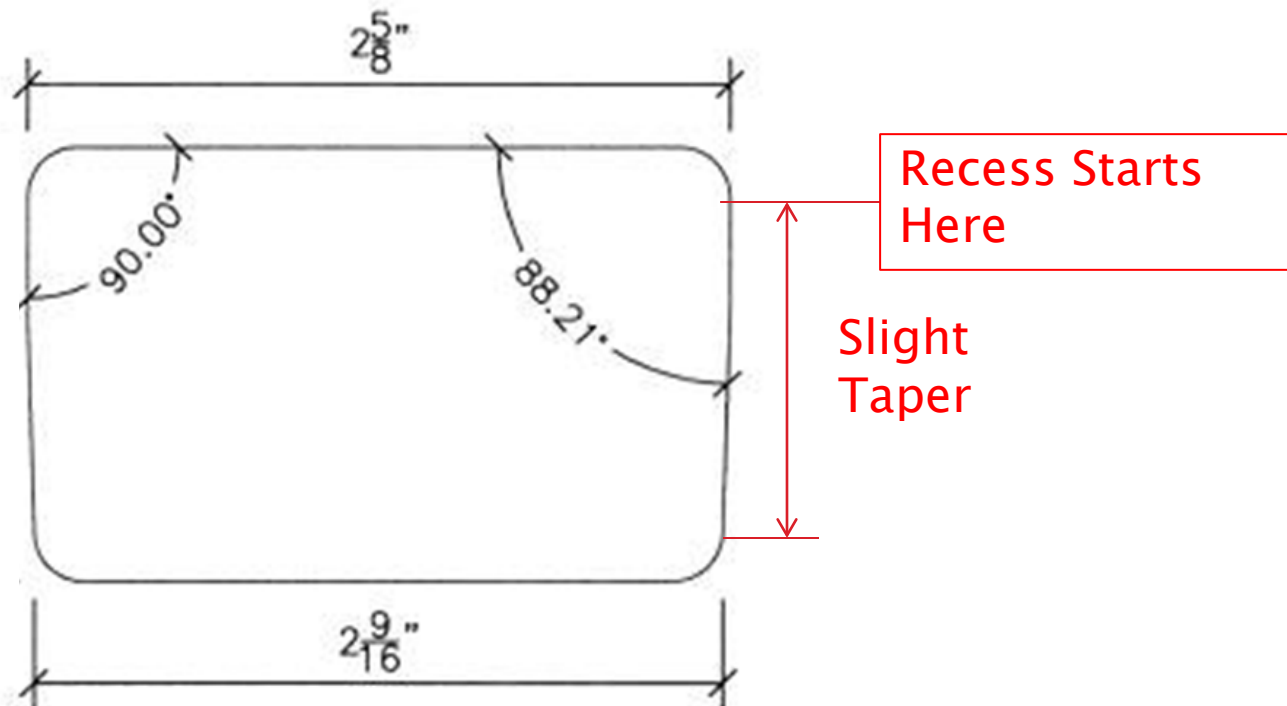
The Good, The Bad, and The Ugly

- ▶ A Change for the better is **Good**
 - Predictable, consistent, interpretation and enforcement
- ▶ Misunderstood Code Language is **Bad**
 - Poor code language is mistakenly interpreted and enforced
- ▶ Controversial Changes can get **Ugly**
 - No substantiation of enhanced building safety, restriction of design freedom, or lacking specific empirical evidence = *Contention*.
 - Contention = Failure to get adopted by Authorities Having Jurisdiction
 - May lead to political solutions

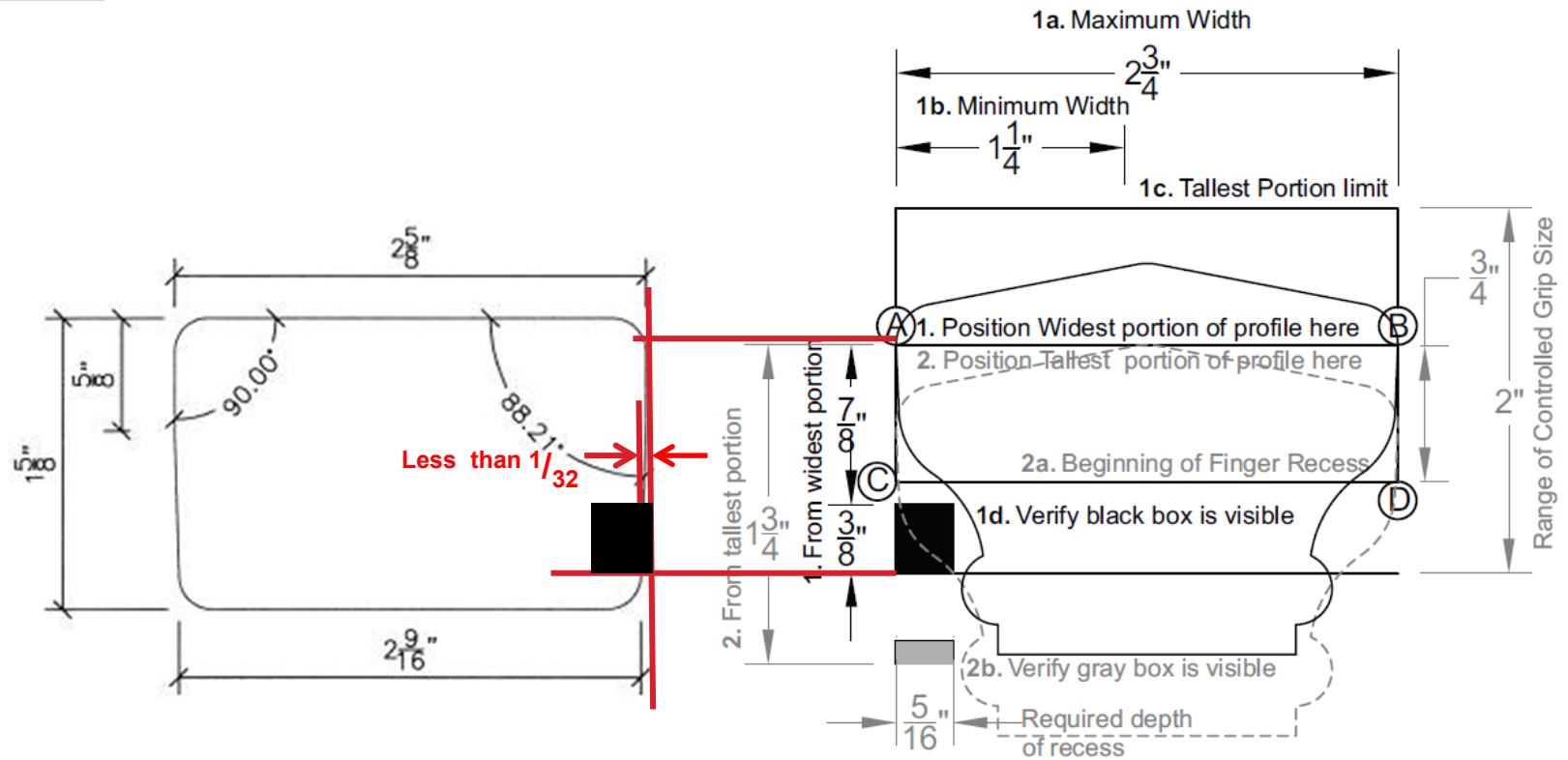
An Ugly Industry Headache



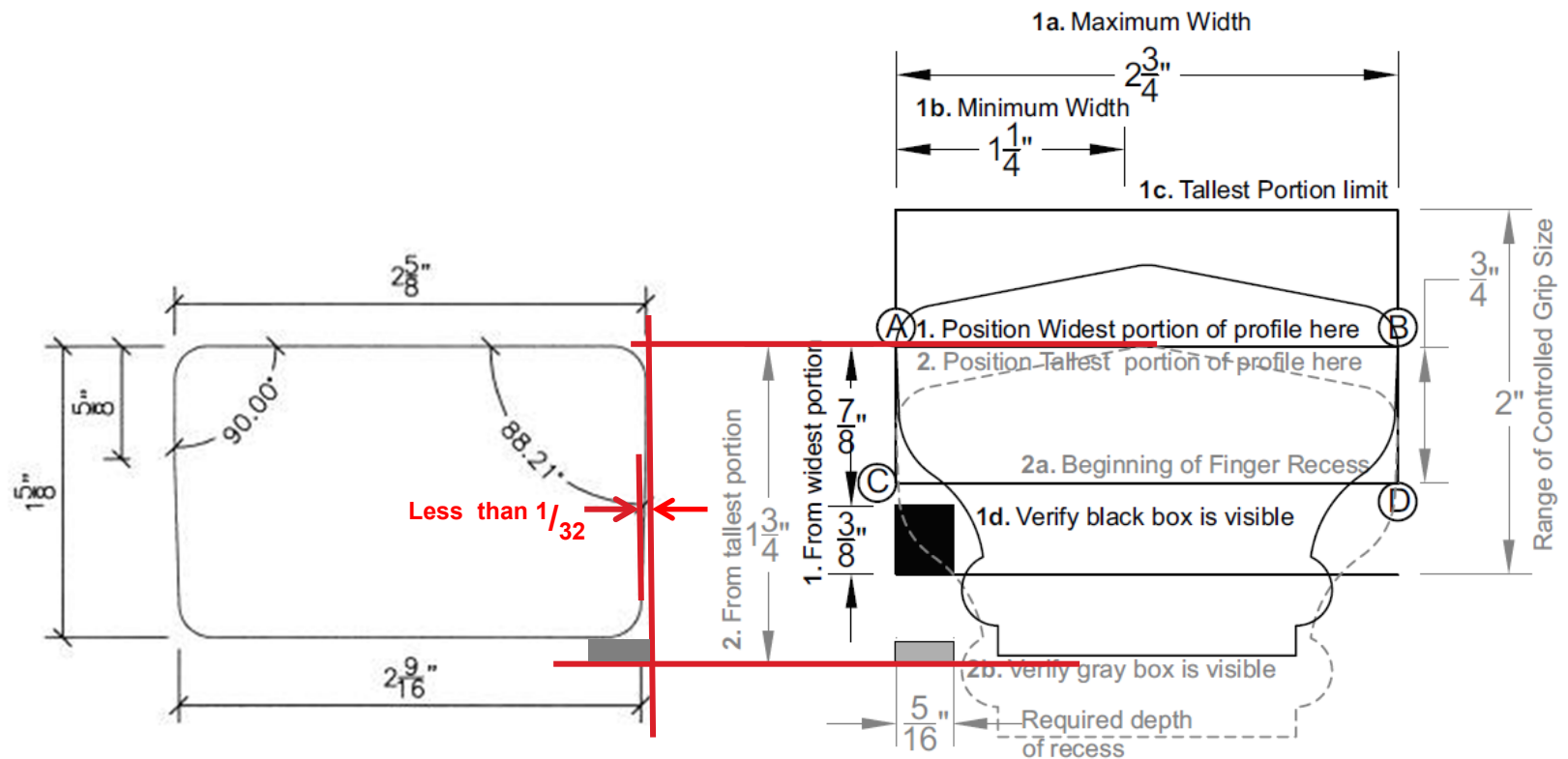
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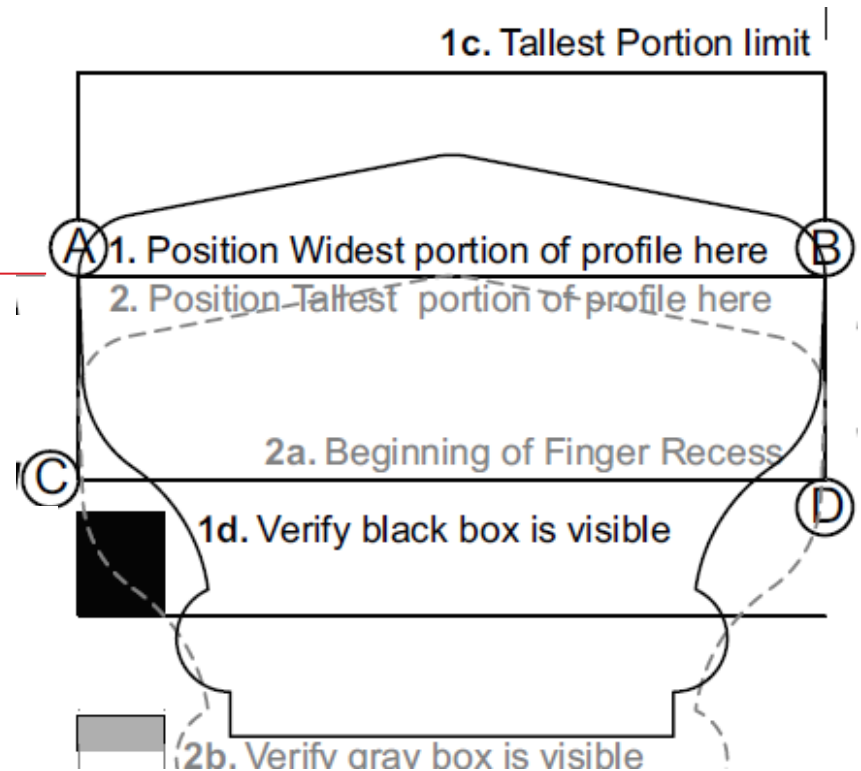
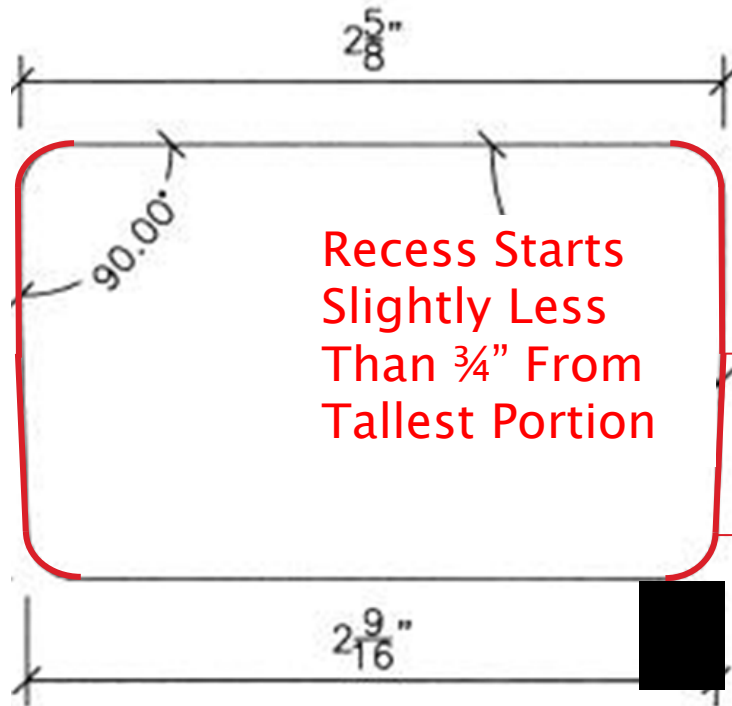
Type II Handrail



Type II Handrail

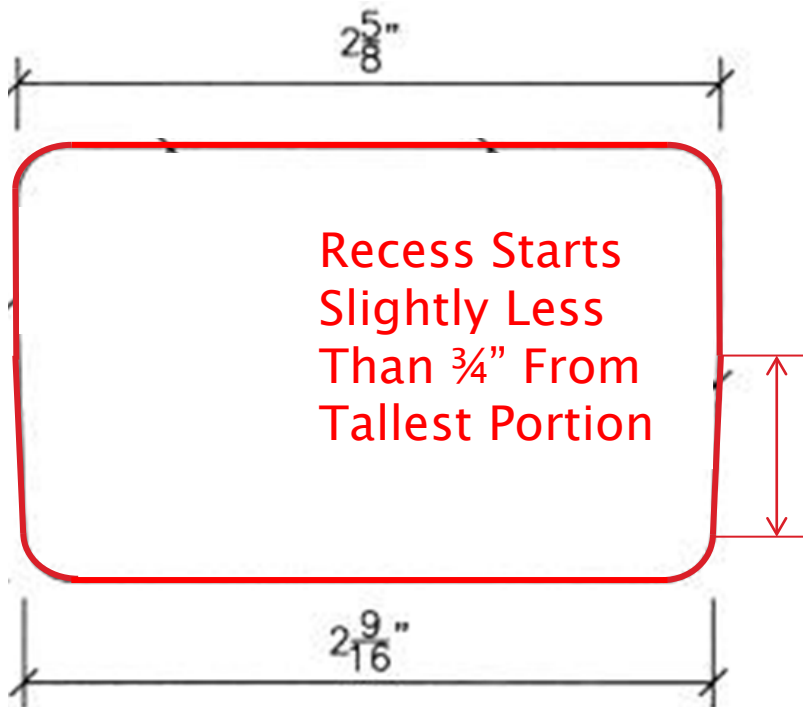


Type II Handrail



Type II Handrail

ICC Staff Interpretation



Question: Does this handrail comply with the Type II handrail requirements?

Answer: The perimeter is greater than 6.75", so Type II handrails requirements must be met. The top of the handrail is between the width of $1\frac{1}{4}"$ and $2\frac{3}{4}"$. The taper of the handrail does start within a distance of $\frac{3}{4}"$ from the top of the handrail. While the handrail does not include the full finger recess as part of the handrail profile, the requirement do not prohibit this either. Assuming that a person's hand could wrap around the full handrail, this configuration would all meet the finger recess depth of $\frac{5}{16}"$ within $\frac{7}{8}"$ of the widest portion of the profile. If this handrail sat on a continuous support, such as a plain of glass, it would be considered to comply. Therefore, it is my opinion that this handrail does meet Type II provisions.

Reasons for Code Reform

- ▶ Does the code needlessly restrict or poorly regulate?
- ▶ Is the code misunderstood, interpreted differently?
- ▶ Does the code fail to address? (unresolved issue, new technology)

What code gives you Headaches?

Code Development a Consensus Process

Any and All may Participate

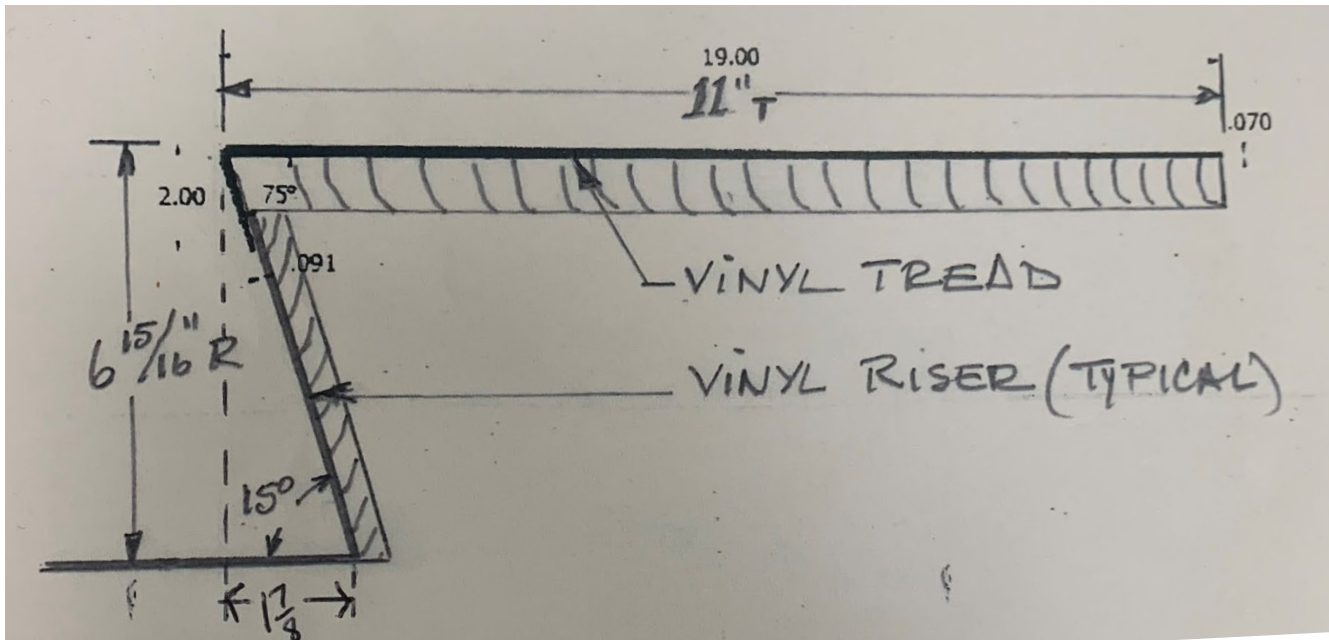
- ▶ SMA Represents **Your Interests**
 - Writing and Soliciting needed change
 - Fighting to maintain critical elements of the code
 - Working with others to reach consensus, regulators, design professionals, builders and contractors, organizations, committees, etc.
 - Investigating - research and testing in support
- ▶ You must **make your interests known**

You are part of the Consensus

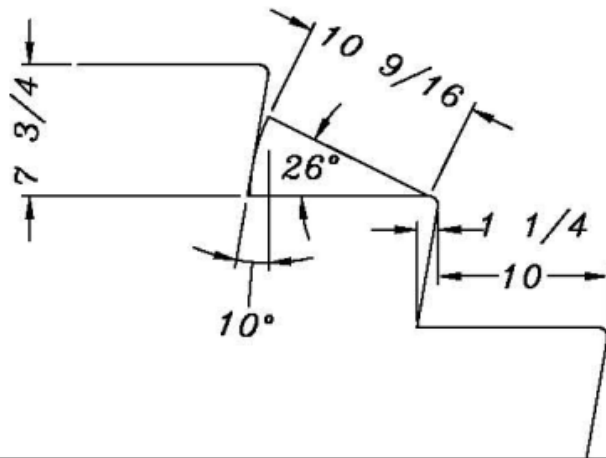


» QUESTIONS?

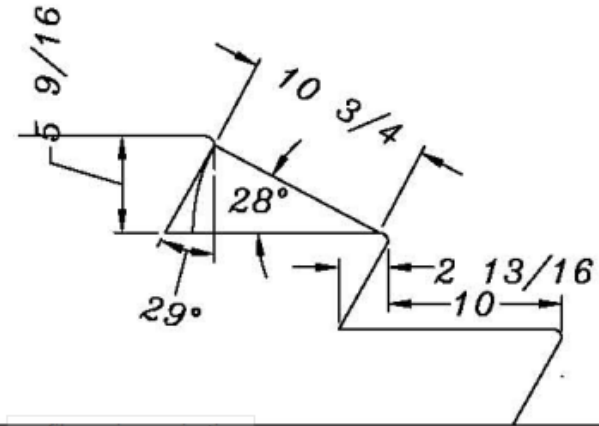
Eliminate 30 degree Risers IBC



Eliminate 30 degree Risers IBC

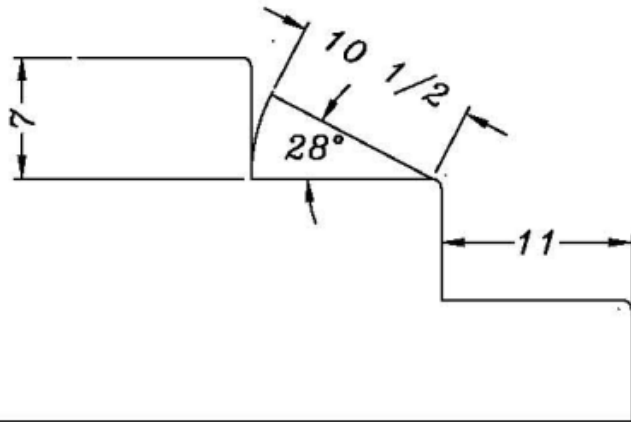


Sloped Riser - shows riser angle at $1 \frac{1}{4}$ inch projection has less available foot space than conventional

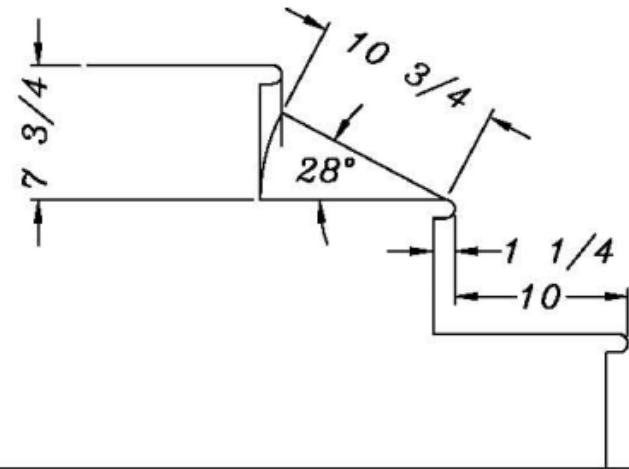


Sloped Riser - shows that lower riser heights of stairs with projection could affect available foot space also shows riser angle required to attain foot space of Conventional. For this and other reasons related to proportion it is best to use wider treads with shorter risers.

Eliminate 30 degree Risers IBC



No Nosing Projection - shows that foot space of 11 inch tread depth is less than conventional with only 10 inch tread depth and that a change in rise has no effect on foot space.



Conventional Construction

Guard Deflection

- ▶ Guard function depends on stiffness as well as strength
- ▶ Guard deflection and is not specifically addressed in the code.
- ▶ IBC and IRC Currently $L/240$ for all other structural members
 - An 8 ft rail would be allowed $96/240=.4$ or approx $\frac{3}{8}$ "
 - A 36" top mounted post would be allowed approx $\frac{1}{8}$ "
- ▶ Will model former proposal RB61-13
 - Cites requirements stated in ASTM D7032, ASTM E985-00(2006), and ICC-ES AC273 covering wood, plastic composite, and Metal
 - Specifies: post, "rail"/top of guard, horizontal and vertical limits
- ▶ Form Consensus group from engineers on Deck Code Coalition to work on proposal that will also include other materials, Glass, cable.

Guard Deflection

As Proposed in RB61-13 – from ASTM and ICC-ES

Structural Member	Allowable Deflection
Post	$H/12$
Top of Guard (horizontal deflection)	$H/24 + L/96$
Top of Guard (vertical deflection)	$L/96$

A 36" top mounted post would be allowed 3" vertical deflection

An 8' rail would be allowed 1" vertical deflection and 2½" horizontal deflection

Deflection is measured at the peak design load

Other Issues?

- ▶ Curved Stair Intermediate Landing Depth measured at the walkline - IRC
- ▶ Reversing winders? Walkline location shifts sides. Currently OK if winder segments are not adjacent, separated by rectangular tread.



Other Issues?

- ▶ Handrail Projection beyond the Stair – IBC & IRC
 - Consider 12” from center of body to center of rail minus distance from center of body to outside of foot.
 - Consider partial open, access/entrapment at ceiling
 - Consider headroom exception
 - Consider curb stringer applications - 4½” maybe justified
- ▶ Cable spacing, “loaded” opening limitation?
 - Opening limitation and structural design load are unrelated
- ▶ Blocking for post and rail connections to the structure, i.e.

“Engineered floor systems shall be designed to accommodate guard system loads transferred to the structure at the open sides of walking surfaces where guard systems are required.”

» QUESTIONS?

The Code and You

»» Thank you for Attending