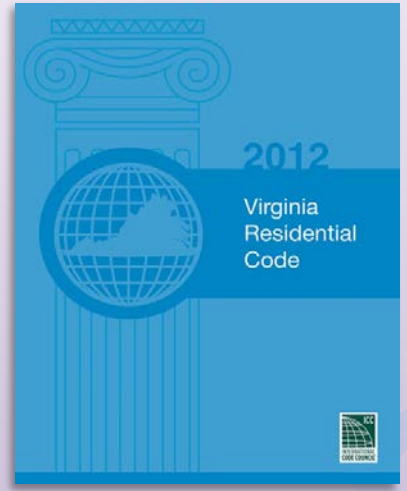
2012 Virginia Residential Code Significant Code Changes



Presented by Arlington County Inspection Services Division
Produced with Virginia Department of Housing and Community Development
Jack A. Proctor Virginia Building Code Academy and
Virginia Building Code Officials Association

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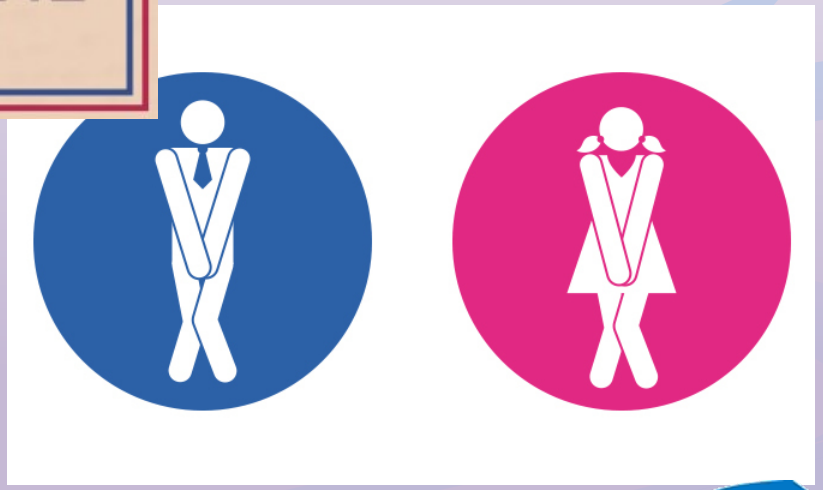
VIRGINIA

Jack A. Proctor
Virginia Building
Code Academy

Welcome!



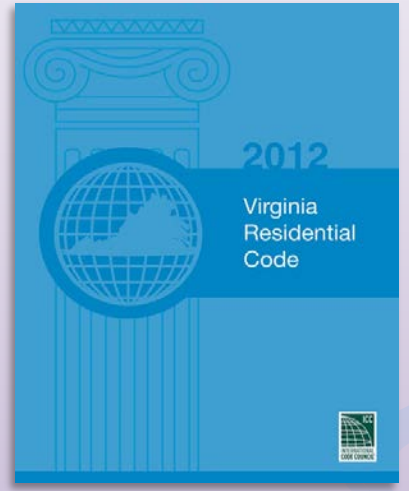
Agenda

Significant Technical Changes from 2009 to 2012 Code Editions

- Includes International Residential Code (IRC) and Virginia Residential Code (VRC)
- Includes Chapter 2 Definitions through Chapter 10 Chimneys and Fireplaces
- Highlights Virginia State Amendments

Virginia State Amendment

Chapter 2



Definitions

R202 Definitions

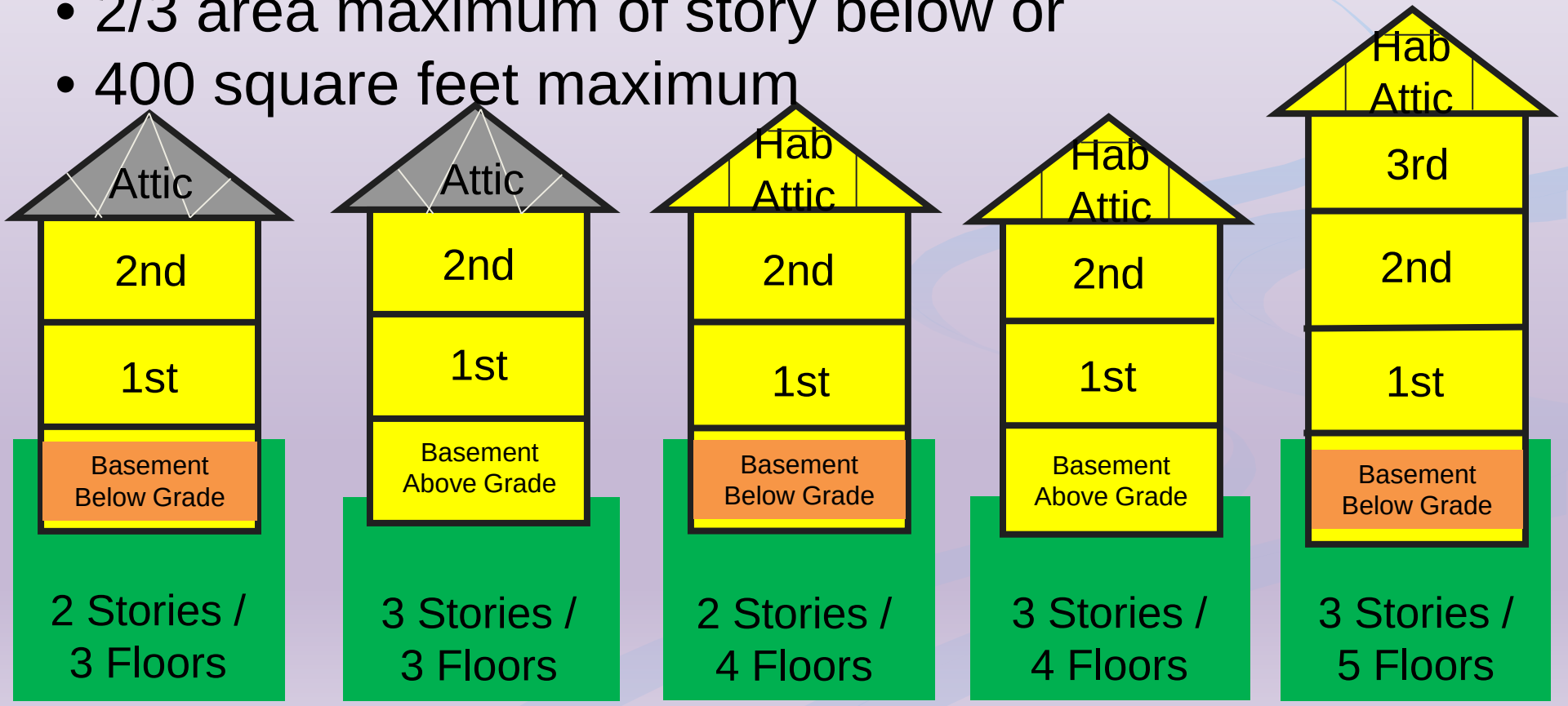
Attic, Habitable – finished or unfinished area not considered Story and occupiable area compliant with certain criteria

- Floor area per Section R304
  - 70 square feet minimum
- Ceiling height per Section R305
  - 50% required floor area of 7 feet minimum
  - 0% required floor area below 5 feet
- Enclosure with:
  - Roof assembly above
  - Floor-ceiling assembly below
  - Knee walls to sides as applicable

R202 Definitions

Attic, Habitable definition limited habitable attics in dwellings or townhouses with 3 stories minimum above grade plane to:

- 2/3 area maximum of story below or
- 400 square feet maximum



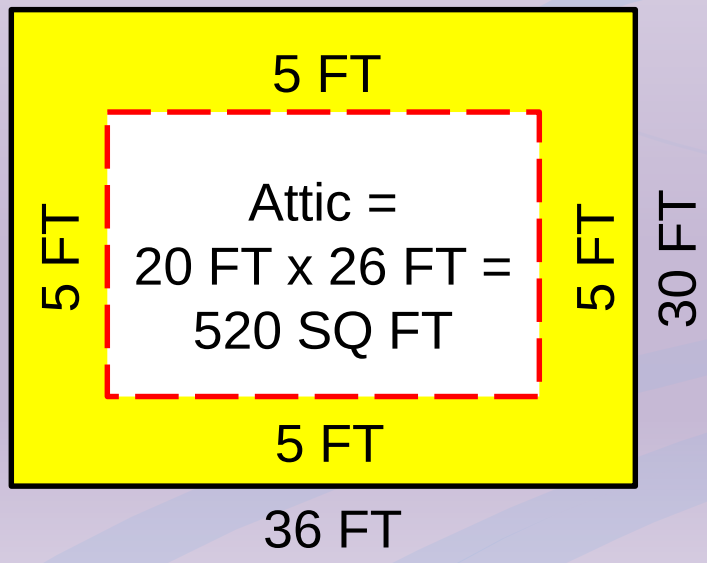
Example 1

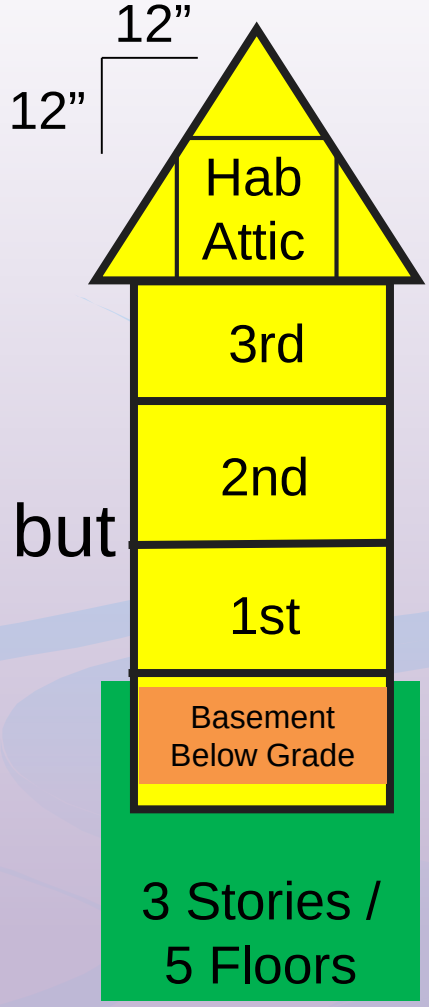
Given:

- 3 stories above grade plane
- 12/12 pitch hip roof
- 3rd floor area = 30’x36’ = 1080 sq ft

Analysis:

- 520 sq ft < 2/3x1080 sq ft < 720 sq ft but
- 520 sq ft > 400 sq ft





Habitable attic not allowed

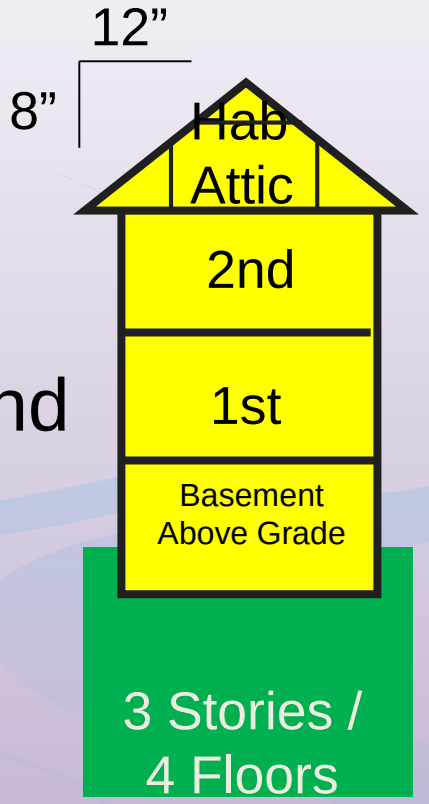
Example 2

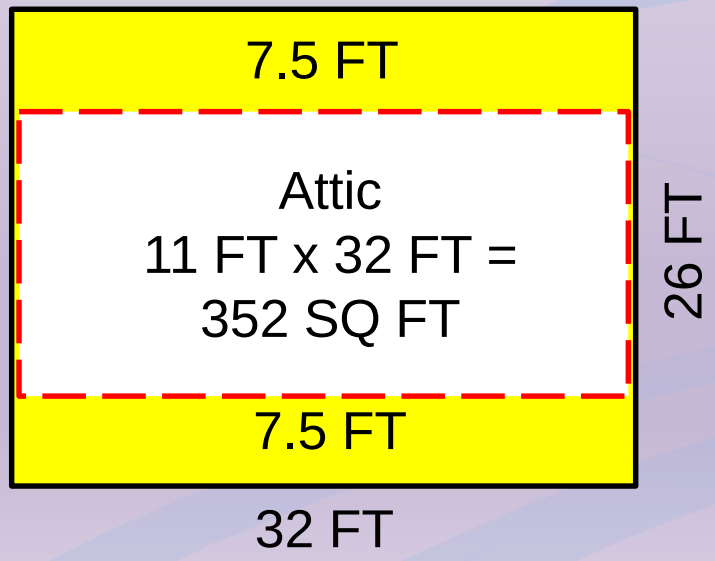
Given:

- 2 stories above grade plane
- 8/12 pitch gable roof
- 2nd floor area = 26’x32’ = 832 sq ft

Analysis:

- 352 sq ft < 2/3x832 sq ft < 554 sq ft and
- 352 sq ft < 400 sq ft





Habitable attic allowed

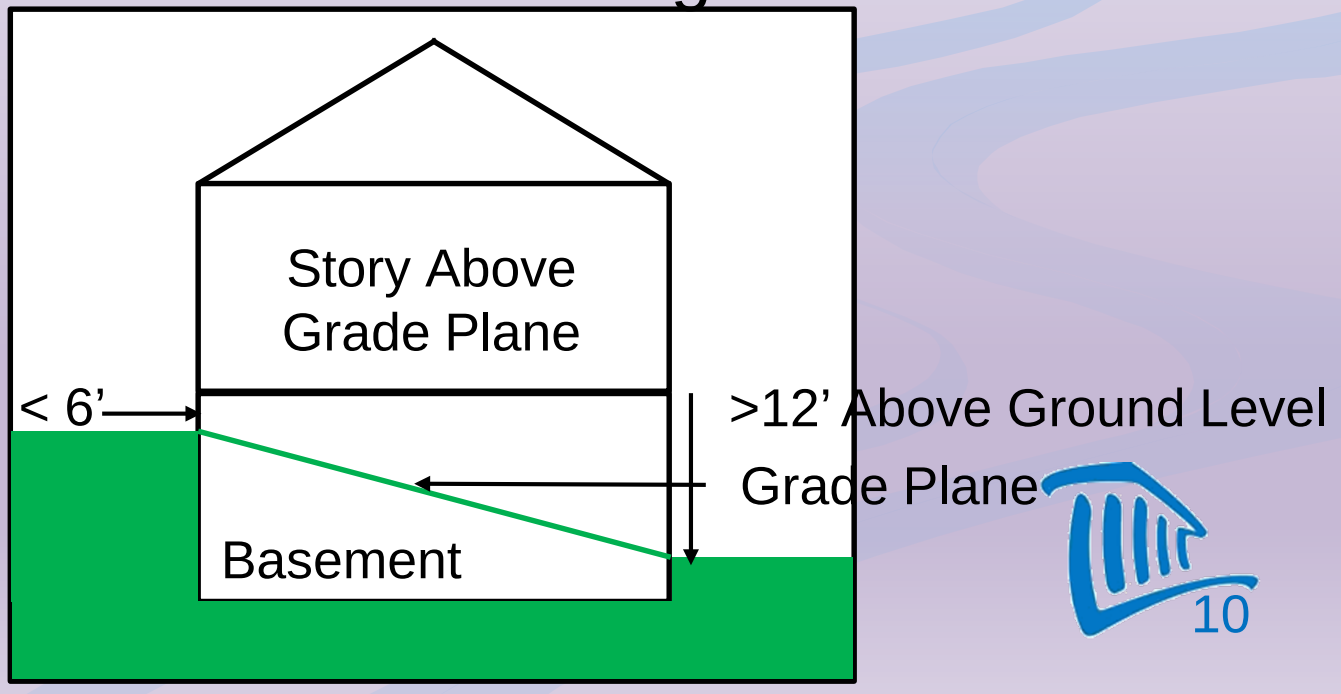
R202 Definitions

Basement – any story not defined as Story Above Grade Plane

R202 Definitions

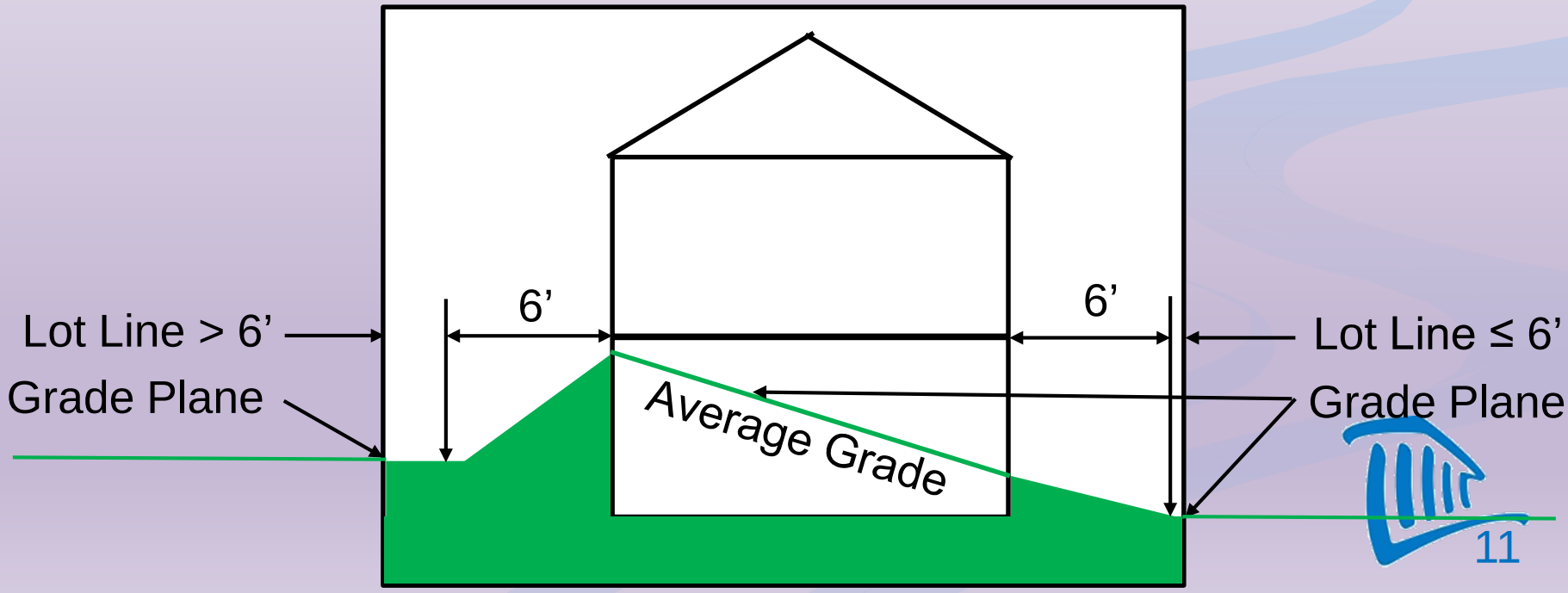
Story Above Grade Plane – any story with finished floor entirely above Grade Plane or with finished floor directly above:

- 6 feet minimum above Grade Plane or
- 12 feet minimum above finished ground level at any point



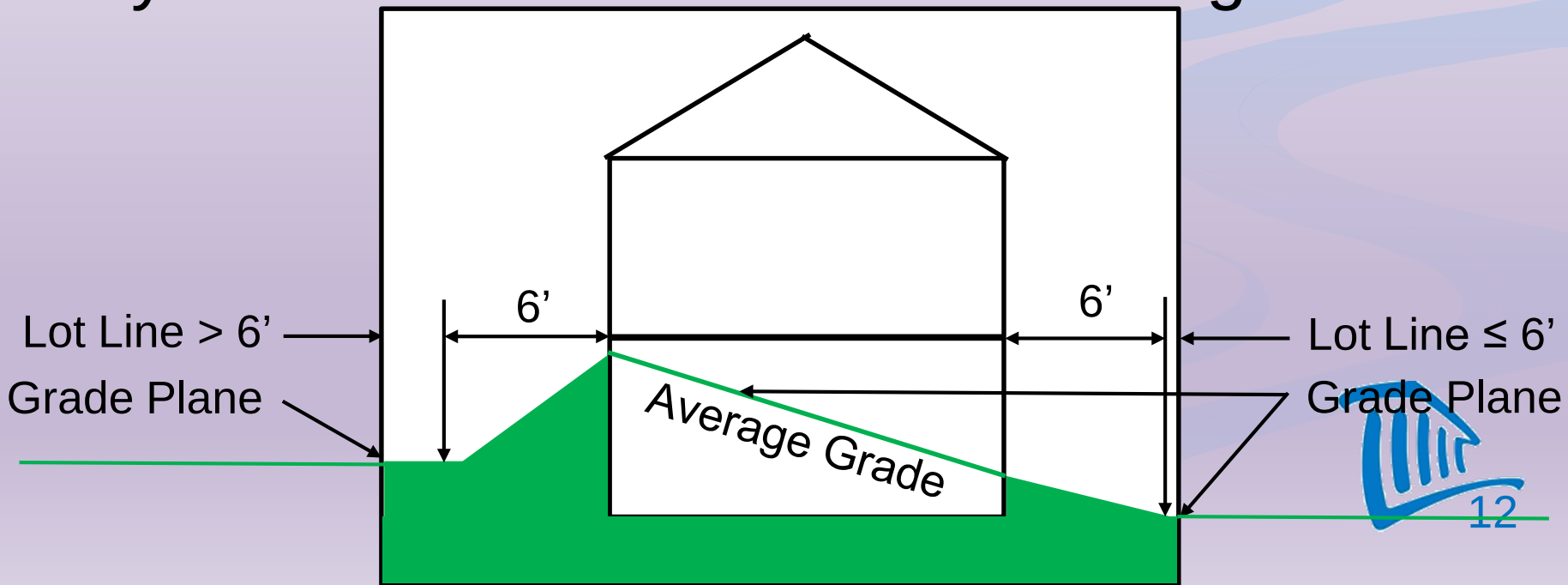
Understand Grade Plane to determine basements or stories relative to grade plane

Grade Plane – reference plane representing average of finished ground levels adjoining building at all exterior walls



Grade Plane where finished ground level slopes away from exterior walls, established reference plane to be at lowest ground point between building and:

- Lot line or
- 6 feet from building where lot line located beyond 6 feet minimum from building



R202 Definitions

Exterior Wall Covering – material or assembly of materials applied to exterior face of exterior wall for purposes of:

- Weather resistance
- Insulative protection
- Aesthetic characteristics

Pan Flashing – corrosion-resistant flashing located at opening base and integrated into exterior wall to direct water to exterior

R202 Definitions

Guestroom – any room or rooms used or intended for use by 1 minimum guest for living or sleeping purposes

Lodging House – single family dwelling with 1 minimum primarily permanent occupant who exchanges rent payments for guestroom

R202 Definitions

Local Exhaust – exhaust system with 1 minimum fan to exhaust air from specific room or rooms in dwellings

Whole-House Mechanical Ventilation System – exhaust or supply system designed to mechanically exchange indoor and outdoor air to satisfy ventilation rate and operated continuously or intermittently

R202 Definitions

Nosing – leading edge of tread on stair and of landing at top of stairway flight and formerly referred to as tread profile

Riser – vertical component of step or stair

R202 Definitions

Photovoltaic Modules / Shingles – roof covering composed of flat-plate photovoltaic modules fabricated into shingles

R202 Definitions

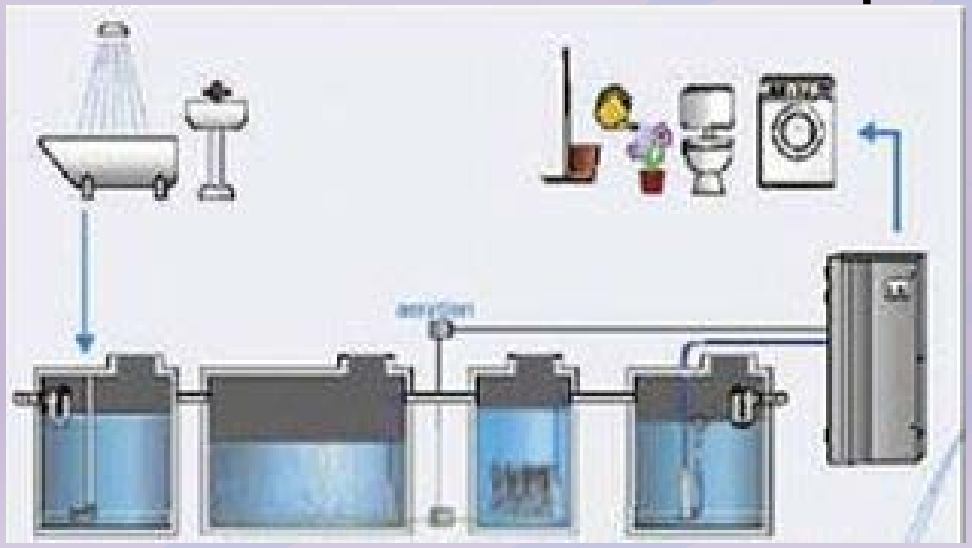
Vapor Permeable – property of having moisture vapor permeance rating of 5 perms minimum

Wind-Borne Debris Region – area within designated hurricane-prone region

R202 Definitions

Nonpotable Fixtures and Outlets – fixtures and outlets not dependent upon potable water to safely perform intended use

Nonpotable Water Systems – water systems for collection, treatment, storage, distribution, and use or reuse of potable water



R202 Definitions

Gray Water – waste water discharged from:

- Lavatories
- Bathtubs
- Showers
- Clothes washers
- Laundry trays

R202 Definitions

Rainwater – natural precipitation from roof surfaces only

Stormwater – precipitation discharged across land surface or through conveyances to 1 minimum waterway

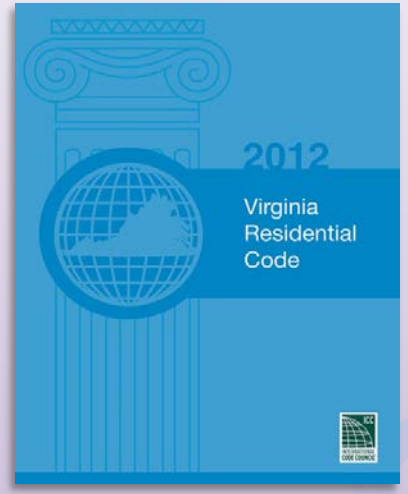
R202 Definitions

Structural Composite Lumber – structural members manufactured with wood elements bonded with exterior adhesives

Included definitions of:

- Laminated Veneer Lumber (LVL)
- Parallel Strand Lumber (PSL)
- Laminated Strand Lumber (LSL)
- Oriented Strand Lumber (OSL)

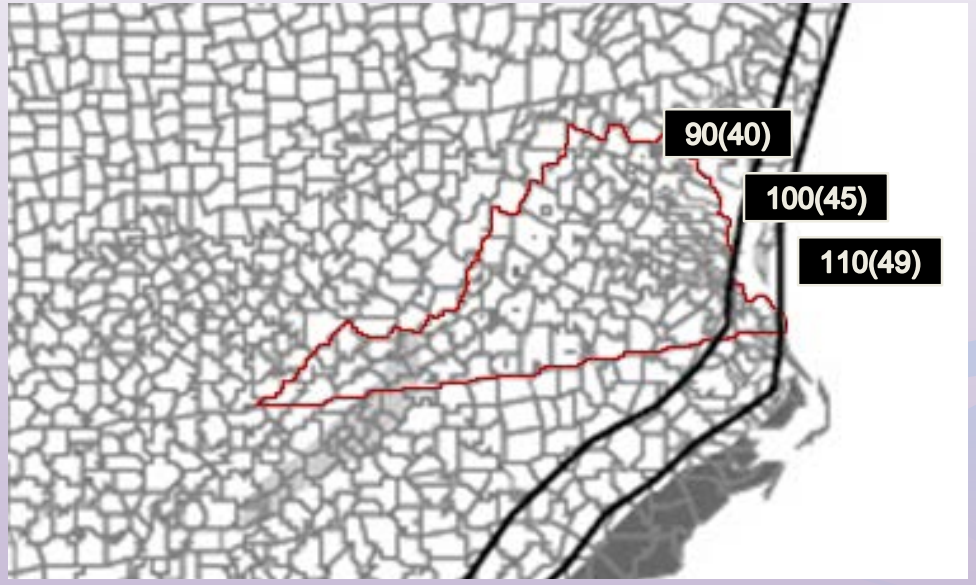
Chapter 3



Building Planning

R301.2.1 Wind Design Criteria

Wind speeds correlated with 2010 ASCE 7



Wind Design Required

Special Wind Regions

R302.2.2(2) Parapets

Exception:

Parapets for townhouses not required where:

- Class C minimum roof covering
- Non-combustible roof decking or sheathing for 4 feet minimum on both sides of common wall
- No roof openings or penetrations within 4 feet minimum of common fire-resistant wall

R303.4 Mechanical Ventilation

Whole-house mechanical ventilation system required in dwellings where:

- Air infiltration rate is less than 5 air changes per hour
- Tested with blower door at 0.2 inch pressure
- Installed per Section M1507.3

R308.4 Hazardous Locations

Glazing at hazardous locations:

- Section reorganized for ease of reading
- Multiple SubSections with titles added
- Multiple lists with various criteria and exceptions reduced

Stair landings at top of stairs not considered hazardous locations

R308.4.6 Glazing Adjacent to Stairs and Ramps

Glazing considered hazardous location where adjacent to:

- Stairways
- Landings between flights of stairs
- Ramps

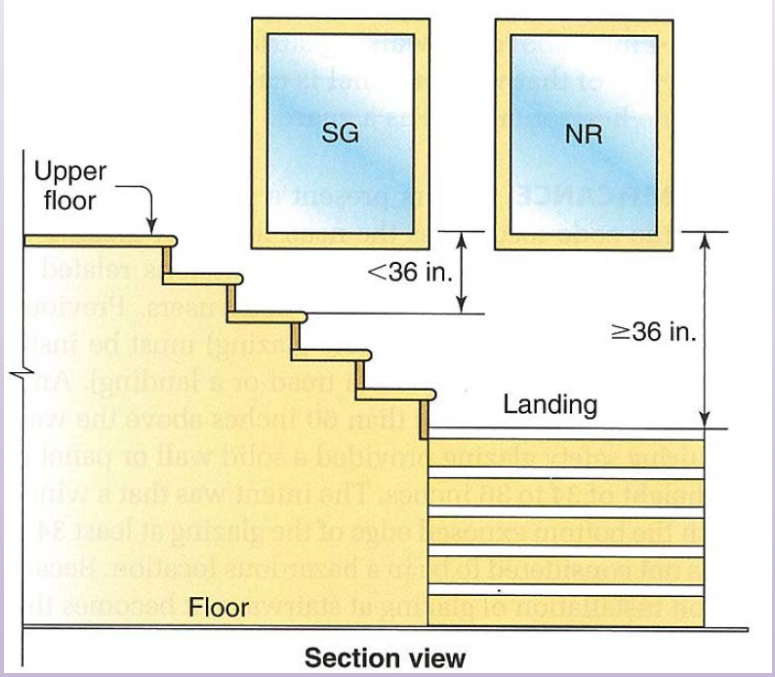
and located where:

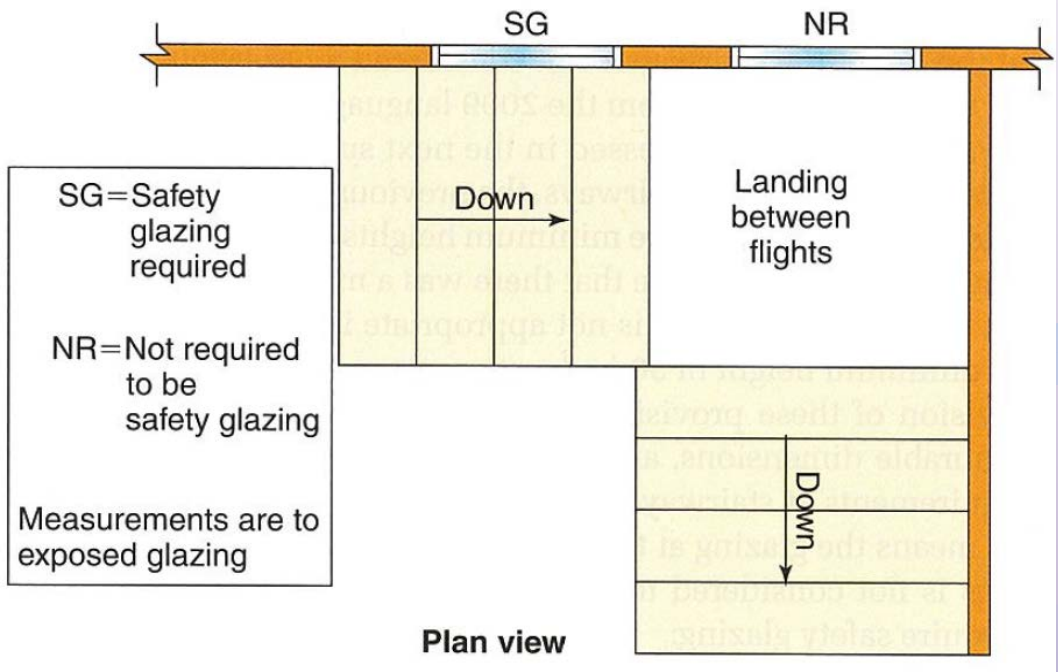
- Bottom of exposed edge 36 inches maximum vertically above plane of adjacent walking surface plane

Exception:

- Glazing located 36 inches minimum horizontally from walking surface

R308.4.6 Glazing Adjacent to Stairs and Ramps





R308.4.7 Glazing Adjacent to Bottom Stair Landings

Glazing considered hazardous location where adjacent to:

- Landings at bottom of stairways

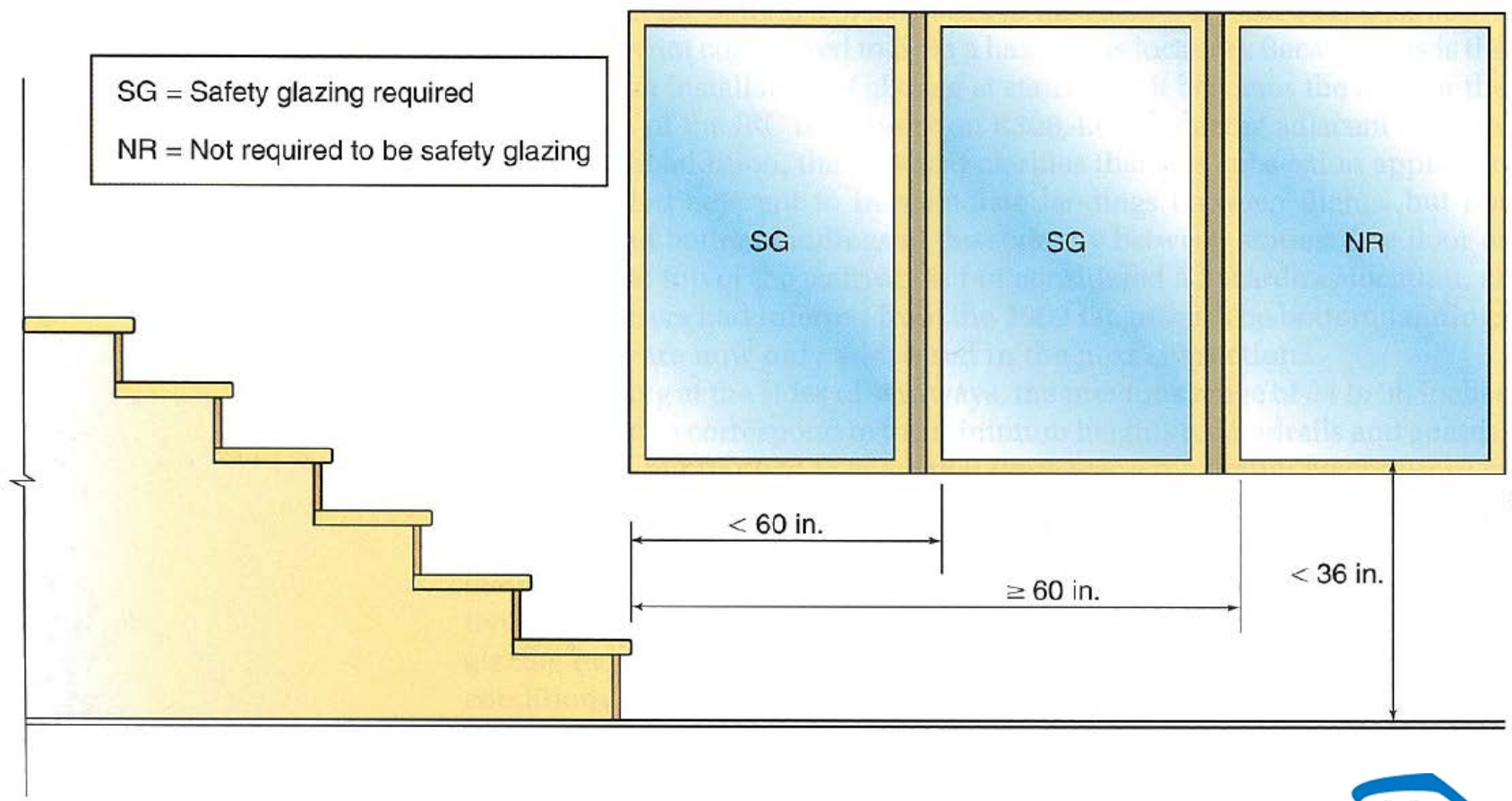
and located where:

- 36 inches maximum vertically above stair landings
  - Measured from bottom stair landings not tread nosings
- 60 inches maximum horizontally of bottom stair treads
  - Measured from bottom stair treads not in any direction

Exception:

- Glazing protected with guards per Section R312 Guards and Window Fall Protection
- Located 18 inches minimum from guards

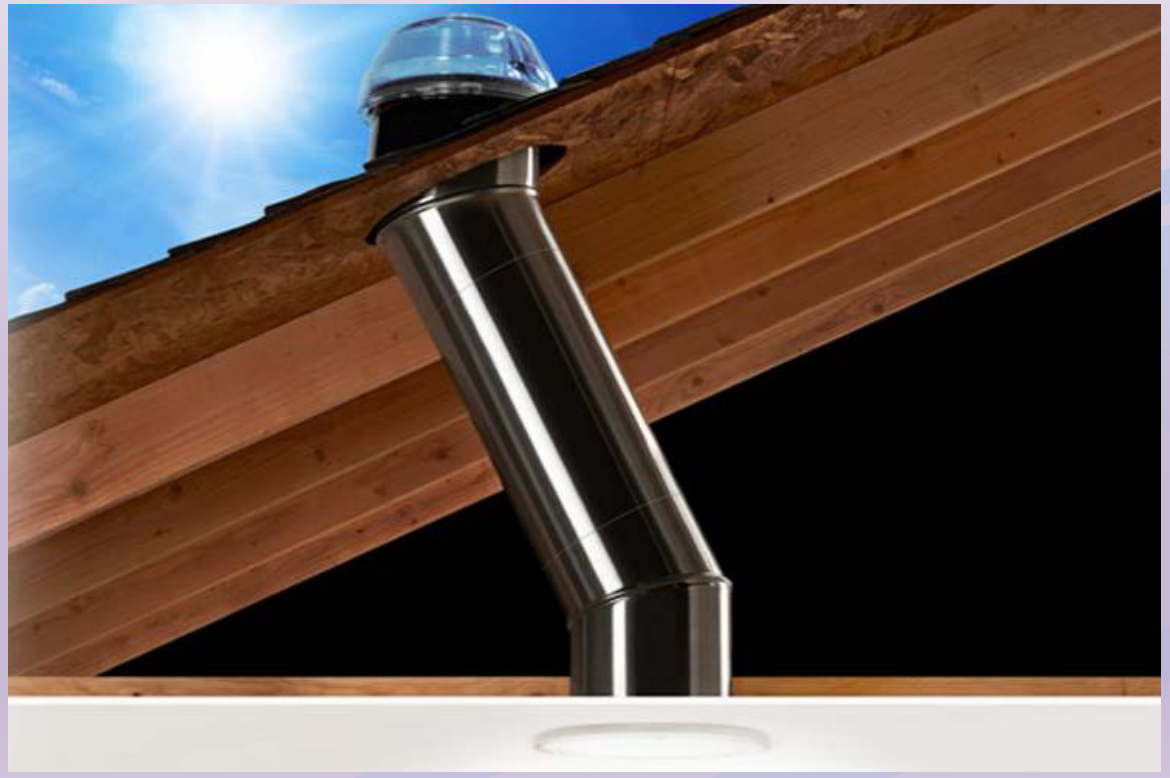
R308.4.7 Glazing Adjacent to Bottom Stair Landings



Glazing adjacent to the bottom landing of a stairway.

R308.6.1 Tubular Daylighting Device

Non-operable fenestration unit primarily designed to transmit daylight from roof surface to interior ceiling via tubular conduit



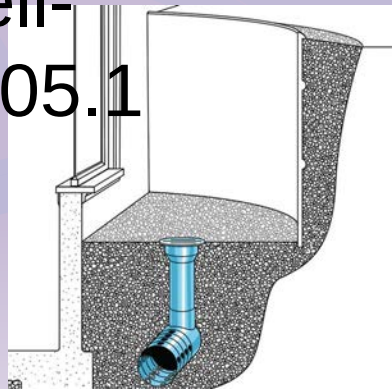
R310.2.2 Drainage

Window wells to be designed for proper drainage:

- By connection to building foundation drainage systems per Section R405.1 Concrete or Masonry Foundations
- By approved alternative methods

Exception:

- Where foundations located on Group I well-drained or sand-gravel soils per Table R405.1 Properties of Classified Soils



R311.2.1 Interior Passage

Interior passage routes in dwelling units with both living / entertainment area and kitchen on same level as required egress door to provide access to:

- Living / Entertainment area
- Kitchen

and where provided on same level as living / entertainment area and kitchen:

- 1 bedroom minimum
- 1 bathroom minimum with water closet, lavatory, and bathtub or shower

R311.2.1 Interior Passage

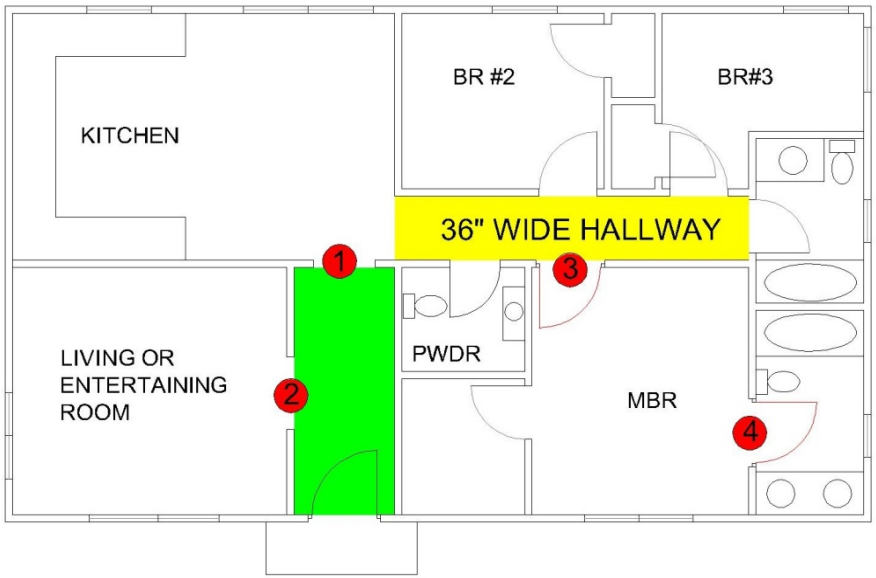
Interior passage routes to provide access to those required areas with:

- Doors of 34 inch minimum nominal width
- Cased openings of 34 inch minimum clear width

Exceptions:

- Doors or cased openings located at end and facing length of interior passage routes / access hallways not of adequate accommodating width
- Doors or cased openings serving closets
- Doors or cased openings serving pantries
- Doors serving bathrooms accessed directly from bedrooms not required to comply

Example 1



EXAMPLE 1

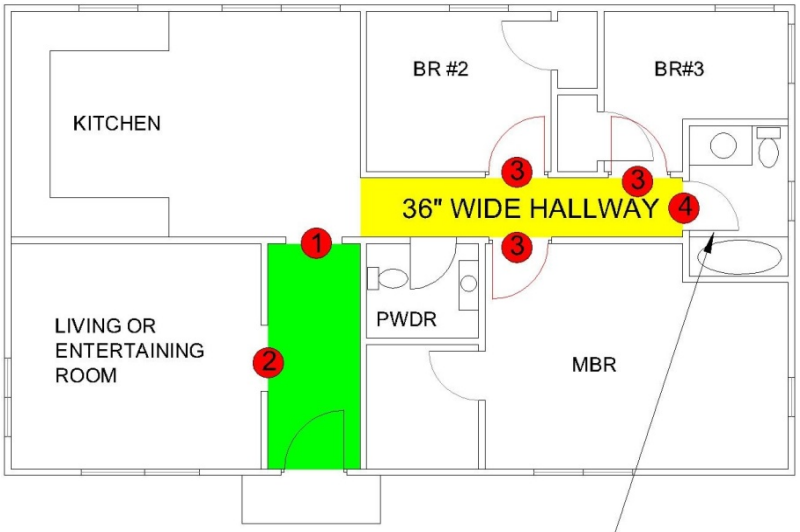
R311.2.1 Interior passage.

Where a dwelling unit has both
1. a kitchen and
2. a living or entertainment area
on the same level as the egress door required by Section R311.2,

Then:
1. An interior passage route shall be provided from such egress door to
1 the kitchen and
2 the living or entertainment area and
3 to at least one bedroom and
4 at least one bathroom containing a water closet, lavatory and bathtub or shower, where such rooms are provided on that same level.
2. Any doors or cased openings along such interior passage route providing access to the areas identified above shall comply with the following:
1. Cased openings shall provide a minimum 34-inch clear width.
2. Doors shall be, at a minimum, nominal 34-inch doors.

Exceptions:
1. Where a door or cased opening, and its associated molding or trim, is at the end and facing the length of a hallway and the width of the hallway is not wide enough to accommodate such doors or cased openings.
2. Closet doors or cased openings.
3. Pantry door or cased openings.
4. Bathrooms accessed directly from a bedroom that is not required to comply with this section.

Example 2



EXAMPLE 2:

DOOR WOULD NOT BE REQUIRED TO BE 34" BY EXCEPTION 1.

R311.2.1 Interior passage.

Where a dwelling unit has both
1. a kitchen and
2. a living or entertainment area
on the same level as the egress door required by Section R311.2,

Then:
1. An interior passage route shall be provided from such egress door to
1 the kitchen and
2 the living or entertainment area and
3 to at least one bedroom and
4 at least one bathroom containing a water closet, lavatory and bathtub or shower, where such rooms are provided on that same level.
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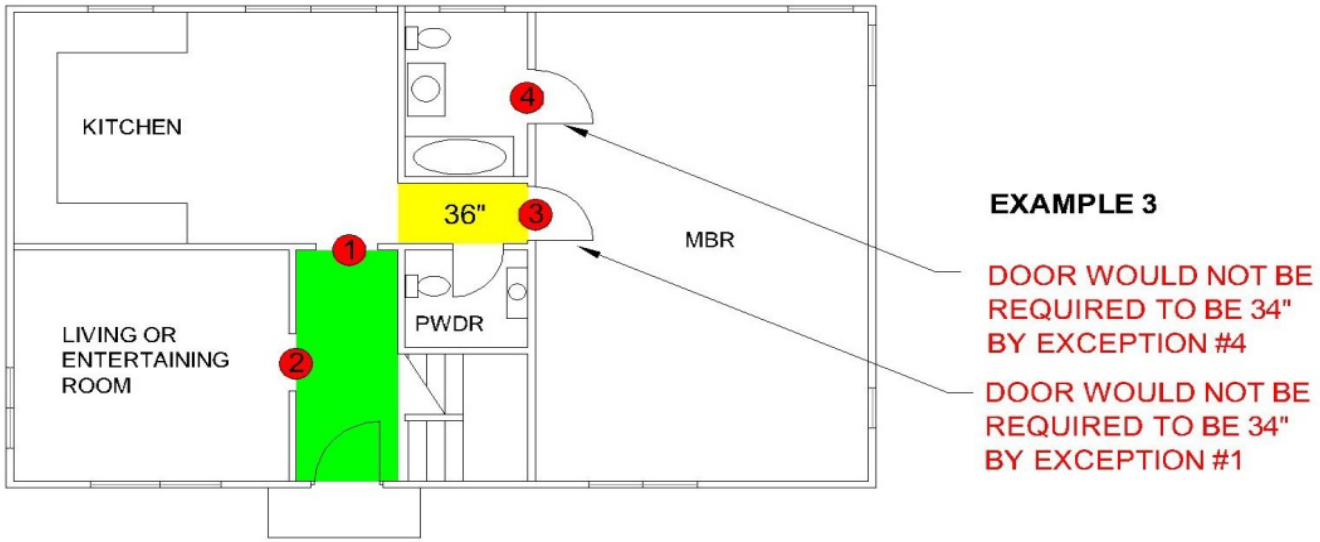
3. Pantry door or cased openings.
4. Bathrooms accessed directly from a bedroom that is not required to comply with this section.

Example 3


KITCHEN
36"
MBR
PWDR
LIVING OR
ENTERTAINING
ROOM
1
2
3
4
EXAMPLE 3
DOOR WOULD NOT BE
REQUIRED TO BE 34"
BY EXCEPTION #4
DOOR WOULD NOT BE
REQUIRED TO BE 34"
BY EXCEPTION #1

R311.3.1 Floor Elevation at Required Egress Doors

Landings or finished floors at required egress doors to be 1½ inch maximum below top of door thresholds

Exception:

- Landings or finished floors at 8¼ inch maximum below top of door thresholds where:
  - On exterior side
  - Not having door swings over landings or floors (door swings to interior side)

R311.7.6 Landing for Stairways

Landings or floors to be located at top and bottom of each stairway

- Depth parallel to travel to be 36 inches minimum
- Width perpendicular to travel to be equal to stair width served minimum

Exception:

- Landings at top of interior stairways without door swing over stairs not required

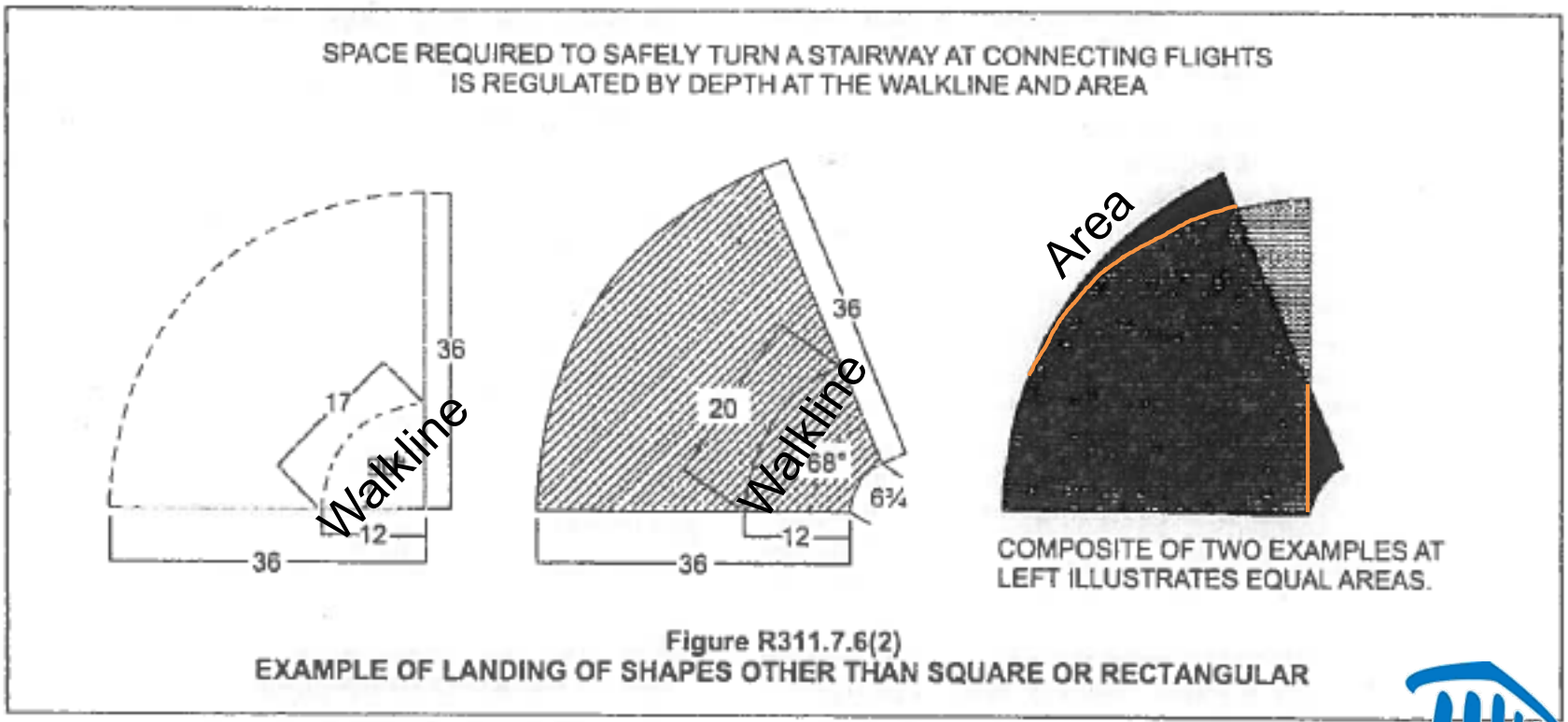
R311.7.6 Landing for Stairways

Curve, angle, geometry, or shape other than square or rectangle allowed where:

- Depth at walkline equal to minimum of depth at walkline for required rectangular landing
- Area at landing equal to minimum of quarter circle with radius equal to required landing width

R311.7.6 Landing for Stairways

Figure R311.7.6(2) Example of Landings Of Other Shapes



R311.7.6 Landing for Stairways

Required landing walkline and area to safely turn and navigate stairways

Figures 1,2, & 3 below illustrate the minimum dimensions proposed of a stairway landing that turns less than 90 degrees.
Note: The outside of each landing is shown with both segmented and curved options that would clarified if the minimum width of the landing described as "measured perpendicular to the line of travel" by this proposal is clarified.

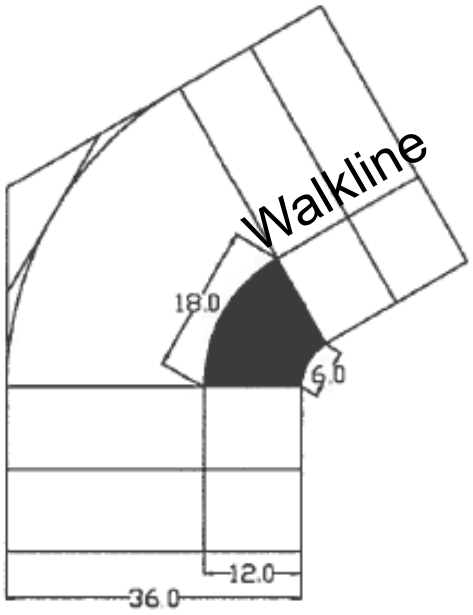


Figure 1:
Proposed 60 degree minimum Landing. The critical area inside of the walk line is shaded.

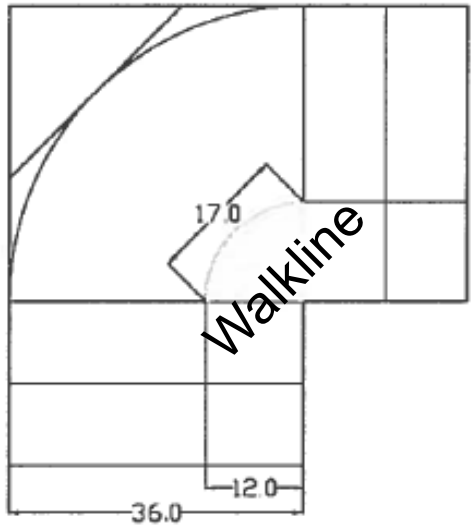


Figure 2:
Convetional 90 degree Landing. The total area inside of the walk line is shaded

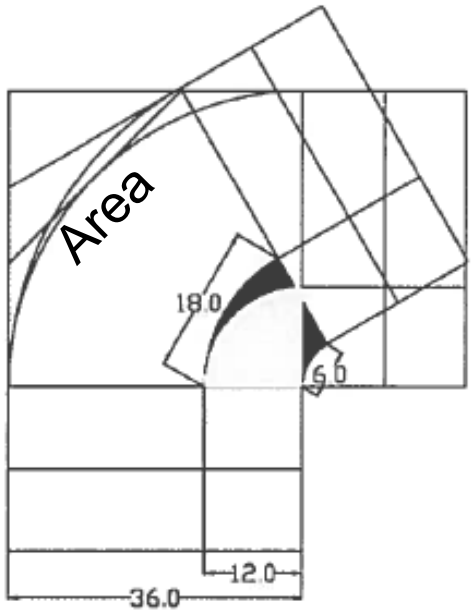


Figure 3:
The 60 and 90 degree landings are shown superimposed . The total area inside of the walk line of the 60 degree winder is comparable to that of conventional when the suggested minimum dimensions are applied.

Understand Walkline to determine curved, angular, or geometrically shaped stair landings other than squared or rectangular

- Measured 12 inches minimum along stair nosing from extreme clear stair width

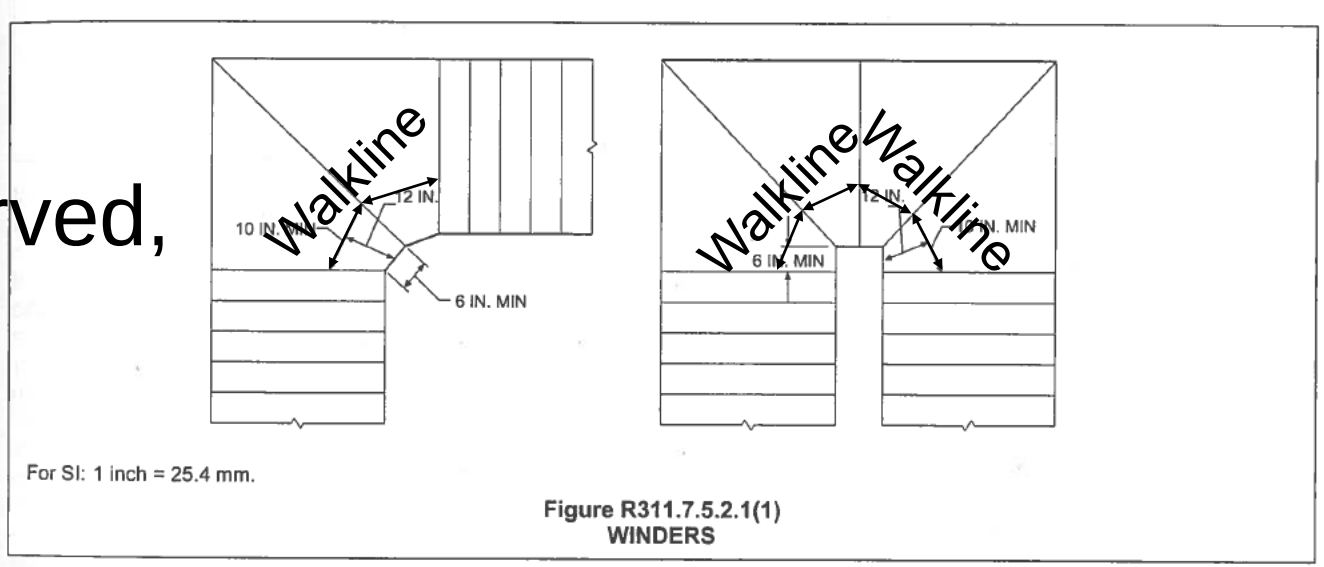


Figure R311.7.5.2.1(1)
WINDERS

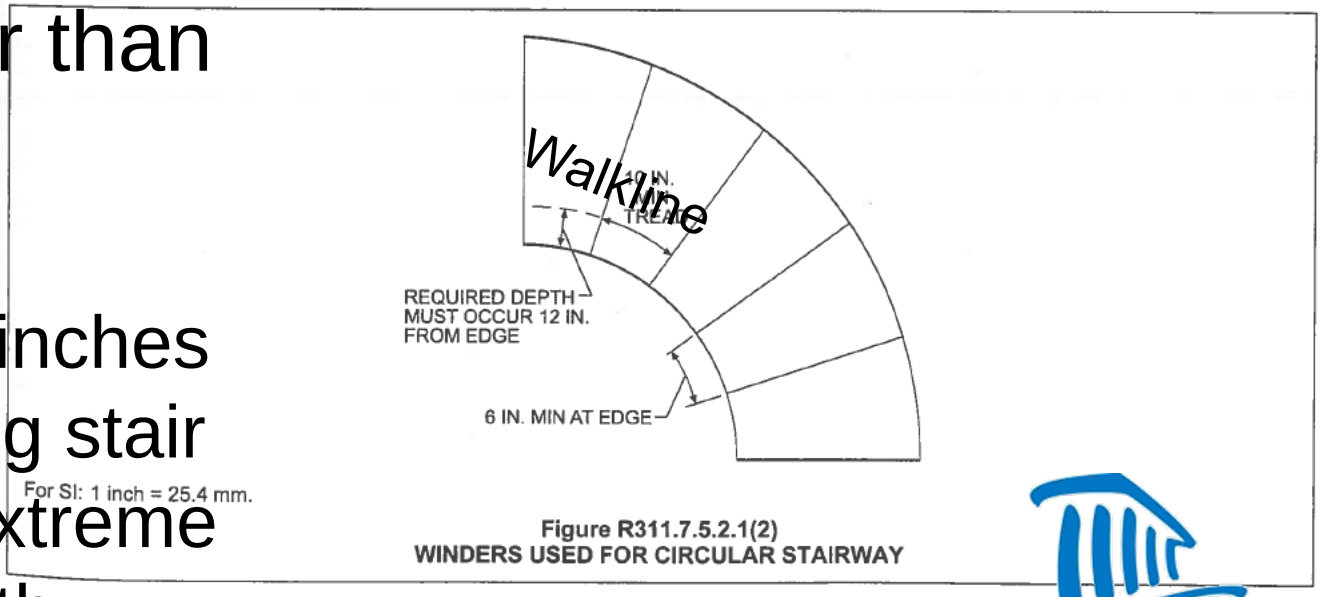


Figure R311.7.5.2.1(2)
WINDERS USED FOR CIRCULAR STAIRWAY

R314.1 Smoke Detection and Notification

Physical interconnection of smoke alarms not required where wireless interconnection provided

R315.2 Carbon Monoxide Detection Systems

Household carbon monoxide (CO) detection system allowed where equipment:

- Owned by homeowner
- Affixed permanently within occupancy
- Monitored by approved supervising station
- Installed per NFPA 720
- Listed and labeled per UL 2075

R316.4 Thermal Barrier

Foam plastics to be separated from interior spaces with approved thermal barriers:

- ½ inch minimum gypsum wallboard
- Other materials tested and accepted per NFPA 275

R316.5.3 Attics

Thermal barriers per Section R316.4
Thermal Barriers not required in attics where complying with certain criteria

Foam plastic insulation to be protected against ignition with 1 of 7 listed ignition barrier materials:

- Included 1½ inch thick cellulose insulation

R317.3 Fasteners and Connectors in Contact with Preservative-Treated and Fire-Retardant-Treated Wood

Fasteners, connectors, and nuts and washers to be approved for contact with preservative-treated wood, fire retardant treated wood, and wood foundations

Referred to Sections R317.3.1 through R317.3.4

R317.3.1 Fasteners for Preservative-Treated Wood

Accepted fasteners:

- Hot-dipped, zinc-coated galvanized steel
- Stainless steel
- Silicon bronze
- Copper

Exceptions:

- Steel bolts of ½ inch diameter minimum
- Other fasteners, not nails or timber rivets, of mechanically-deposited zinc-coated steel
- Plain carbon steel fasteners in dry interior environment for SBX / DOT and zinc borate preservative-treated wood

R317.3.3 – R317.3.4 Fasteners for Fire-Retardant-Treated Wood

Section R317.3.3 Accepted fasteners in exterior or wet / damp locations:

- Hot-dipped, zinc-coated galvanized steel
- Stainless steel
- Silicon bronze
- Copper
- Other fasteners, not nails or timber rivets, of mechanically-deposited zinc-coated steel

R317.3.4 Accepted fasteners in interior locations:

- Per manufacturer recommendations
- Per Section R317.3.3 above in absence of manufacturer recommendations

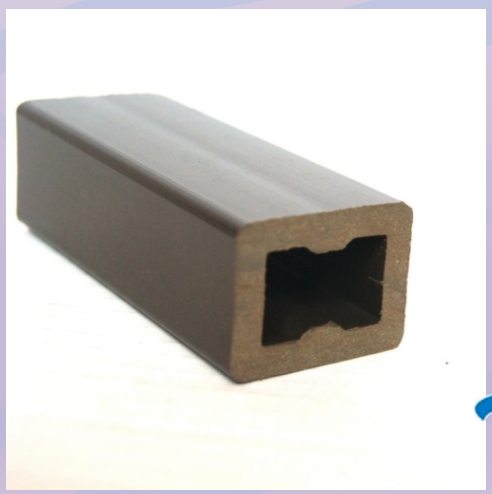
R317.4.1 Labeling

Wood / Plastic composite materials for exterior:

- Deck boards
- Stair treads
- Handrails
- Guardrails

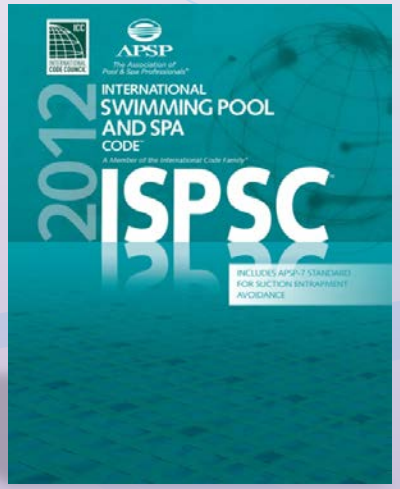
to be labeled with:

- Maximum allowable load
- Maximum allowable span
- Required performance level
- Compliant with ASTM D 7032



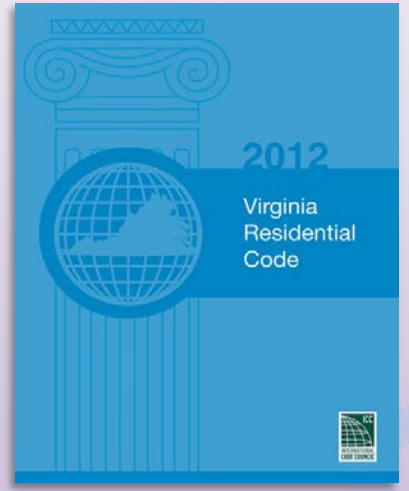
R325 Swimming Pools

International Swimming Pool and Spa Code (ISPSC) for swimming pool requirements referenced



References to VRC Appendix G Swimming Pools, Spas, and Hot Tubs deleted

Chapter 4



Foundations

R405.1 Concrete or Masonry Foundation Drains

Perforated drains to be surrounded with:

- Approved filter membranes
- Filter membranes covering washed gravel or crushed rock that cover drains

Exception:

- Where foundations located on Group I well-drained or sand-gravel soils per Table R405.1 Properties of Soils Classified

R408.3.1 Termite Inspection

Unvented crawl spaces to provide clear and unobstructed view of vertical face of sill plate

Inspection gap to be provided:

- Below sill plate at top of interior foundation wall covering
- Throughout all enclosed foundations
- 1 inch minimum in width
- 2 inches maximum in width

Exceptions:

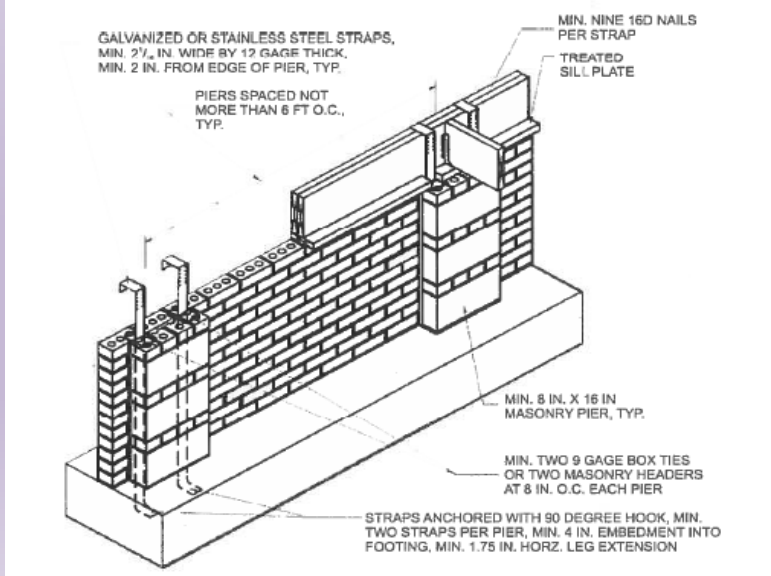
- Areas not subject to termite damage per Table R301.2(1) Climatic and Geographic Design Criteria
- Areas provided with other approved inspection means

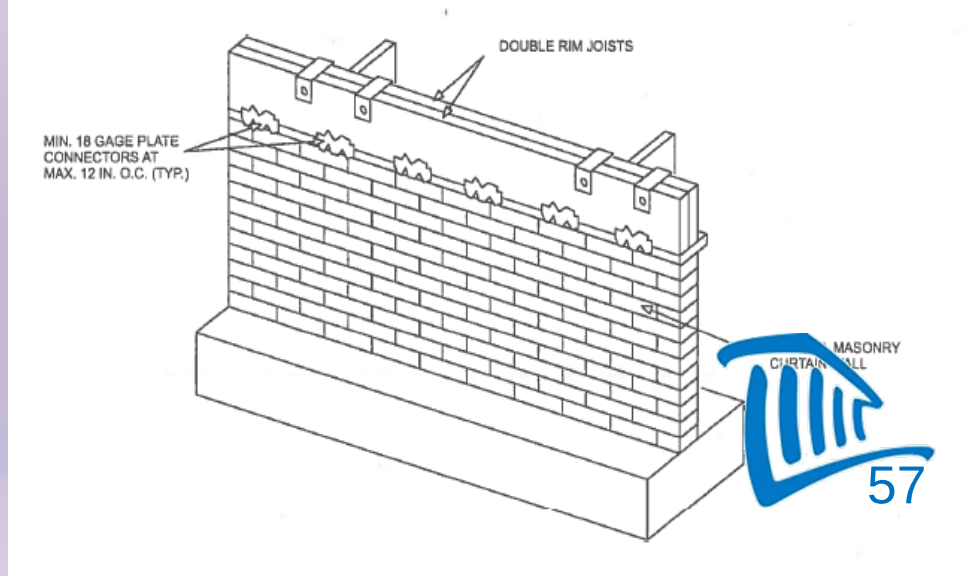
R408.3.1 Termite Inspection

Pier and curtain foundations to provide clear and unobstructed view of interior face of rim joist and sill plate

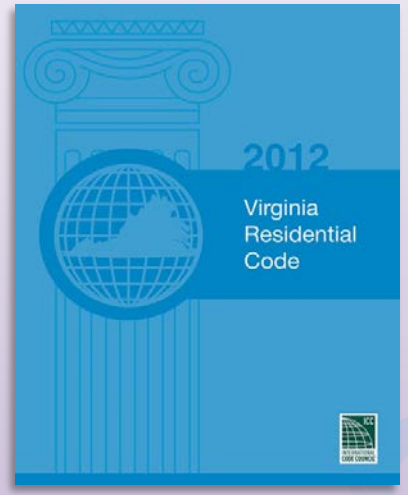
Exception:

- Fiberglass or similar insulation where easily removable





Chapter 5



Floors

R501.3 Fire Protection of Floors

Section R501.3 Fire Protection of Floors deleted in entirety

Fire protection of non-fire-resistance rated floor assemblies with membranes applied to underside of 2”x8” or less nominal floor framing members not required

Referred to Virginia DHCD errata

R502.1.3, R602.1.1, and R802.1.2 End Jointed Lumber

End-jointed lumber in required fire-resistance rated assemblies to be designated with Heat Resistant Adhesive or HRA within grade mark

Also required in:

- Section R602.1.1 Wall Construction / Wood Framing
- Section R802.1.2 Roof-Ceiling Construction / Wood Framing

R502.3 Allowable Joist Spans

Tables R502.3.1(1) and R502.3.1(2) Floor Joist Spans for Common Lumber Species revised to reflect reduced allowable floor joist spans for Southern Pine lumber

R502.5 Allowable Girder and Header Spans

Tables R502.5(1) Girder and Header Spans for Exterior Bearing Walls and R502.5(2) Girder and Header Spans for Interior Bearing Walls revised to require Southern Pine Number 1 Grade minimum lumber

Table R502.5(3) Girder and Header Spans for Porches added

- Based on Southern Pine
- Based on Number 2 Grade minimum lumber

R502.6 Bearing

Ends of joists, beams, and girders to bear on:

- Masonry or concrete directly
- Sill plate
  - 2 inch minimum nominal thickness
  - 48 square inches minimum nominal bearing area

R503.2.1, R602.3, and R803.2.1 Wood Structural Panel Sheathing Identification and Grade

Wood structural panels to comply with DOC PS 1 or DOC PS 2 and to be identified by grade mark or certificate of inspection by approved agency with:

- Grade
- Bond classification
- Performance category

Also required in:

- Section R602.3 Wall Construction / Wood Framing
- Section R803.2.1 Roof-Ceiling Construction / Wood Framing

R506.2.3 Vapor Retarder

Exception 1: Vapor retarder allowed to be omitted from:

- Attached and detached garages
- Utility buildings
- Other unheated accessory structures

R507 Decks

Section R507 Decks relocated and revised from Section R502.2.2 Decks

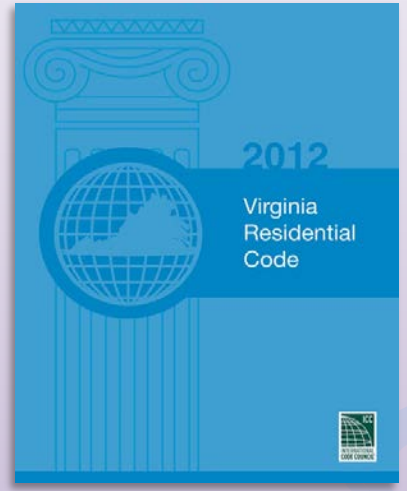
Allowable spans for deck joists and deck beams reduced to reflect wet service conditions

R507 Decks

Multiple Sections, Tables, and Figures added and revised

- Section R507.4 Decking
- Table R507.4 Maximum Joist Spacing
- Section R507.5 Deck Joists
- Table R507.5 Deck Joist Spans and Cantilevers for Common Lumber Species
- Section R507.6 Deck Beams
- Table R507.6 Typical Deck Beam Spans
- Section R507.7 Deck Joist and Deck Beam Bearing
- Section R507.7.1 Deck Beam to Deck Post
- Section R507.8 Deck Posts
- Section R507.8.1 Deck Post to Deck Footing
- Table R507.8 Deck Post Heights

Chapter 6



Wall Construction

R602.3 Design and Construction

Section R602.3 Design and Construction revised to include:

- Components of exterior walls to be fastened per Tables R602.3(1) through R602.3(4)
- Wall sheathing to be fastened directly to framing members and capable of resisting applicable adjusted wind pressures per Tables R301.2(2) and R301.2(3) where on exterior side of exterior wall
- Wood structural panel sheathing on exterior wall to comply with DOC PS 1 or DOC PS 2
- Wall sheathing for exterior wall covering purposes only to comply with Section R703 Exterior Covering

R602.3 Design and Construction

Table R602.3(1) Fastener Schedule For Structural Members revised

TABLE R602.3(1) Fastener Schedule for Structural Members

Item	Description of Building Elements	Number and Type of Fastener[a,b,c]	Spacing of Fasteners
	Roof		
5	Rafter or roof truss to plate, toe nail	~~2~~ 3-16d box nails (3½″ × 0.135″) or 3-10d common nails (3″× 0.148″)	2 toe nails on o side and 1 toe on opposite si of each rafter truss[j]
	Wall		
7	Built-up ~~corner~~ studs –face nail	10d (3″ × 0.128″)	24″ o.c.
8	Abutting studs at intersecting wall corners, face nail	16d (3½″ × 0.135″)	12″ o.c.

R602.3.1 Stud Size, Height, and Spacing

Exception 2 for studs 10 feet minimum in height revised

- 2”x6” studs at 16” oc allowed to be 18 feet in height
- 2”x6” studs at 12” oc allowed to be 20 feet in height
- To be Number 2 Grade minimum lumber
- To support 1 maximum roof load
- To support tributary roof load of 6 feet maximum

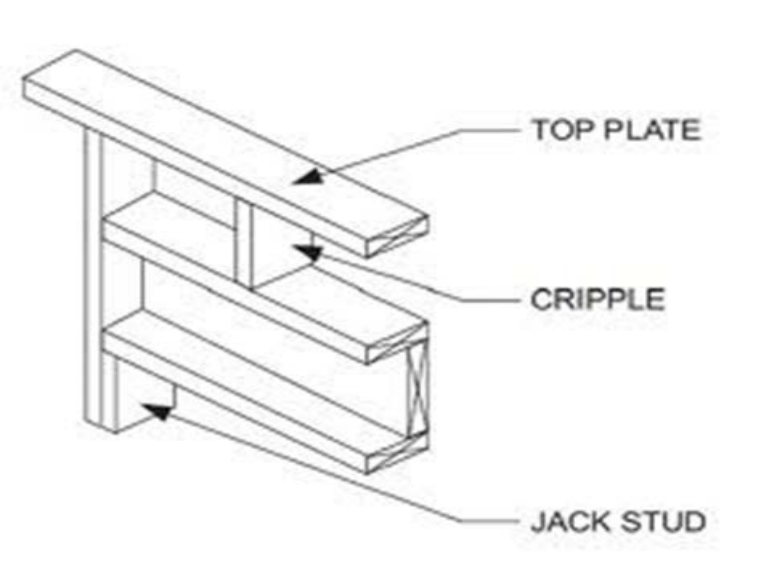
and where:

- Snow load of 25 psf maximum
- Ultimate wind design speed of 130 mph maximum

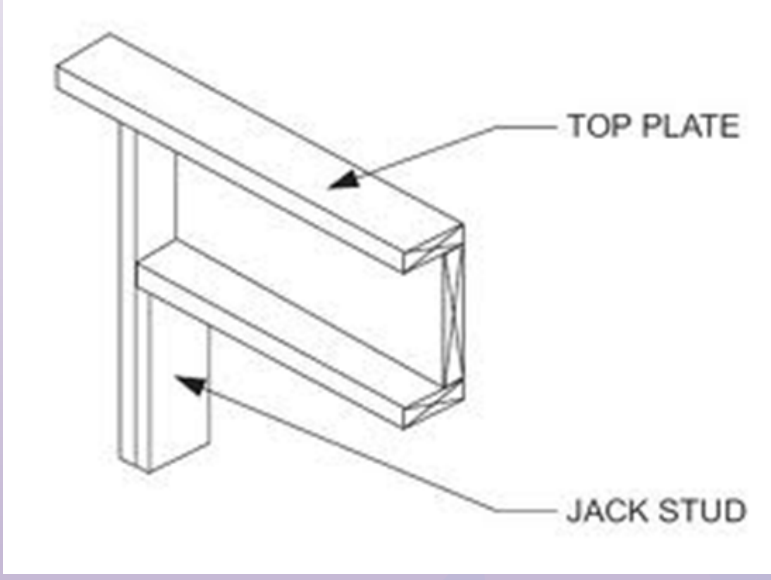
Table R602.3.1 Maximum Allowable Length of Wood Wall Studs deleted

R602.7 Single Member Headers

Table R602.7.1 Spans for Minimum Number 2 Grade Single Header added



Exterior Bearing Wall



Alternative Framing Without Cripple Wall

R602.7.4 Supports for Headers

Headers to be supported on each end with 1 jack stud and 1 king stud minimum

King studs to be fastened to each end of headers with 4 -12d nails minimum

R602.10 Wall Bracing

Wall bracing required per 1 of 3 Sections:

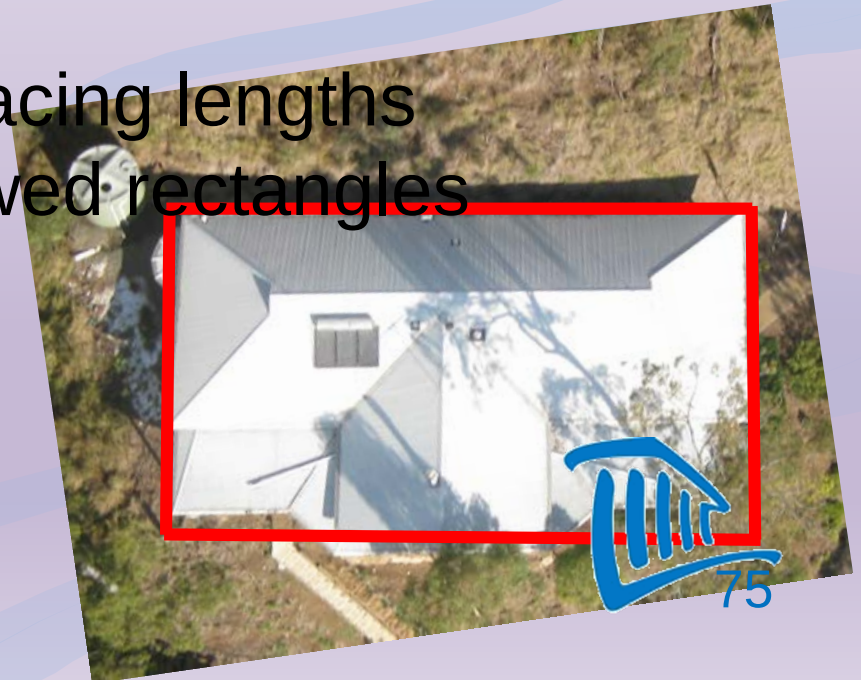
- R602.10 Wall Bracing
- R602.12 Practical Wall Bracing or
- R301.1 Design Criteria, including
  - Engineered designs
  - Construction systems
  - Alternative provisions and approved Referenced Standards
    - AFPA WFCM Wood Frame Construction Manual
    - AISI S230 Standard for Cold-Formed Steel Framing – Prescriptive Method
    - ICC 400 Standard on Design and Construction of Log Structures

Building Official permitted to waive analysis of upper floors in certain conditions

R602.12 Practical Wall Bracing

Allowed where compliant with certain wall braced panel criteria:

- Braced wall panel requirements
- Sheathing materials
- Circumscribed rectangles
- Side bracing lengths
- Contributing cumulative bracing lengths
- Common bracing with skewed rectangles
- Cripple walls
- Walk-out basement walls
- Distribution
- Connections
- Supports



R602.12 Practical Wall Bracing

Specific braced wall panel requirements:

- Heights
- Lengths
- Joints
- Methods per Sections R602.10.4 and R602.10.6 Construction Methods for Braced Wall Panels
  - ABW – Alternate braced wall panels
  - PFH – Portal frame with holddowns
  - PFG – Portal frame at garage door openings
  - CS-PF – Continuously sheathed portal frame
- Interior finish materials
  - ½ inch minimum gypsum board fastened per Table R702.3.5 Minimum Thickness and Application of Gypsum Board

R602.12.3 Circumscribed Rectangles

Required length of wall bracing to be calculated by circumscribing 1 minimum rectangle around building and/or portions thereof

- Areas included:
  - Enclosed offsets
  - Enclosed projections
- Areas excluded:
  - Chimneys
  - Partial height offsets and projections
  - Open areas and structures

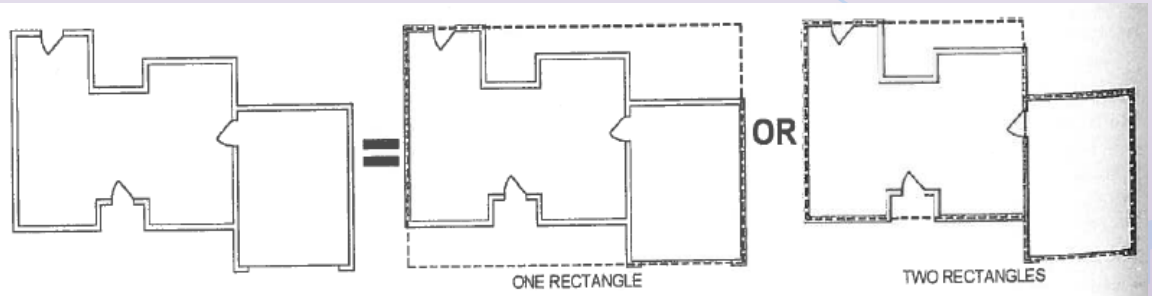


FIGURE R602.12.3
CIRCUMSCRIBED RECTANGLES

Each rectangle to be:

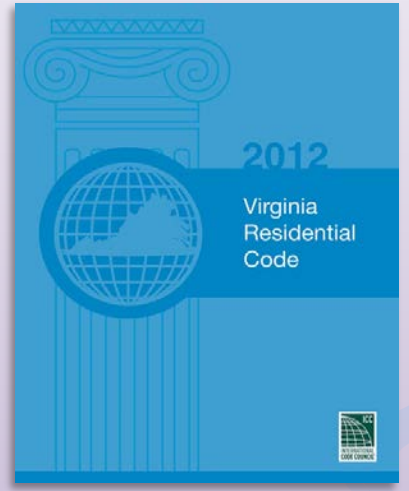
- 80 feet maximum lengths of sides
- 3:1 ratio maximum between long and short sides
- Skewed to include angled offsets and projections

R602.12 Practical Wall Bracing

Upper floor wall braced panel analysis not required where:

- Approved per Building Official
- Upper floor ceiling height ≤ lower floor ceiling height
- Upper floor window area ≤ lower floor window area

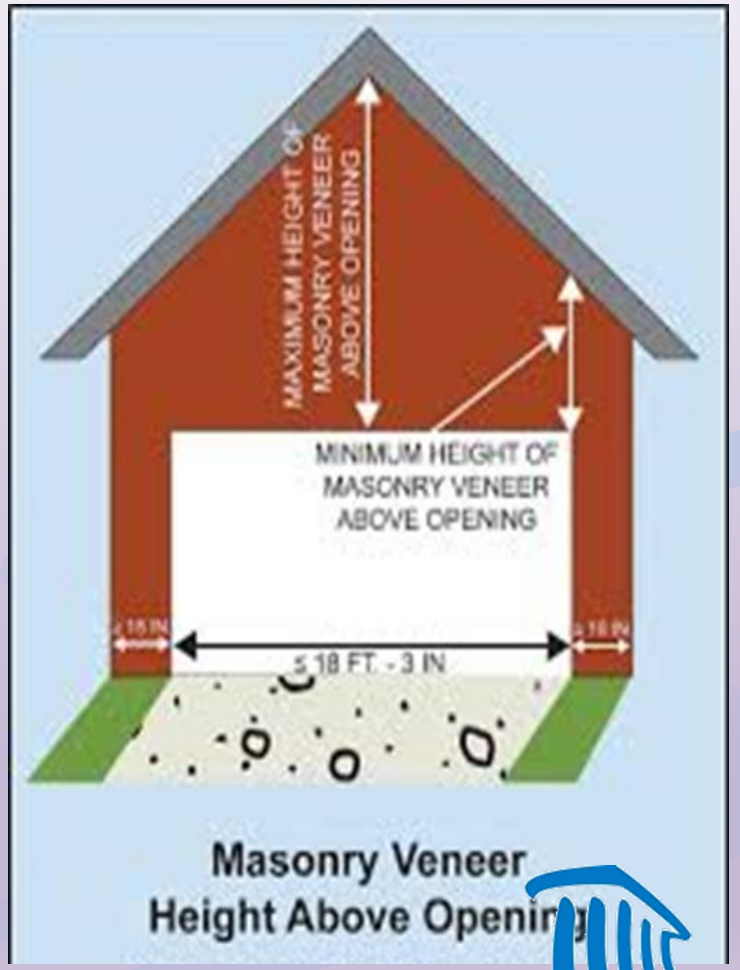
Chapter 7



Wall Covering

R703.7.3.2 Maximum Spans

Section R703.7.3.2 Maximum Spans Condition 4 and Table R703.7.3.2 Masonry Veneer Height Above Openings added to provide minimum and maximum masonry veneer heights above lintel openings



R703.7.4 Masonry Veneer Anchorage

Table R703.7.4 Tie Attachment and Air Space Requirements added for masonry veneer

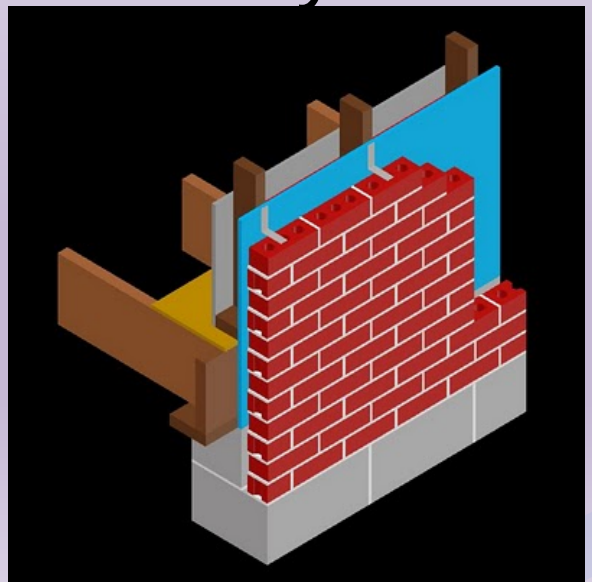


TABLE R703.7.4 Tie Attachment and Air Space Requirements

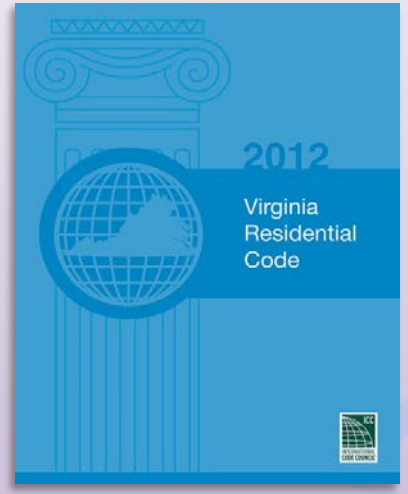
Backing and Tie	Minimum Tie	Minimum Tie Fastener[a]	Air Space	
Wood Stud Backing with Corrugated Sheet Metal	22 U.S. gage (0.0299 in.) × 7/8 in. wide	8d common nail[b] (2½ in. × 0.131 in.)	Nominal 1 in. between sheathing and veneer	
Wood Stud Backing with Metal Strand Wire	W1.7 (No. 9 U.S. gage; 0.148 in.) with hook embedded in mortar joint	8d common nail[b] (2½ in. × 0.131 in.)	Minimum nominal 1 in. between sheathing and veneer	Maximum 4½ in. between backing and veneer
Cold-Formed Steel Stud Backing with Adjustable Metal Strand Wire	W1.7 (No. 9 U.S. gage; 0.148 in.) with hook embedded in mortar joint	No. 10 screw extending through the steel framing a minimum of three exposed threads	Minimum nominal 1 in. between sheathing and veneer	Maximum 4½ in. between backing and veneer

For SI: 1 inch = 25.4 mm.

a. In Seismic Design Category D_0, D_1 or D_2, the minimum tie fastener shall be an 8d ring-shank nail (2½ in. × 0.131 in.) or a No. 10 screw extending through the steel framing a minimum of three exposed threads.

b. All fasteners shall have rust inhibitive coating suitable for the installation in which they are being used, or be manufactured from material not susceptible to

Chapter 8



Roof-Ceiling Construction

R802.4 Allowable Ceiling Joist Spans

Tables R802.4(1) and R802.4(2) Ceiling Joist Spans For Common Lumber Species revised to reflect reduced allowable spans of Southern Pine lumber

R802.5 Allowable Rafter Spans

Tables R802.5(1) through R802.5(9) Rafter Spans For Common Lumber Species revised to reflect reduced allowable spans of Southern Pine lumber

R802.7.1 Sawn Lumber

Section R802.7.1.1 Cantilevered Portions of Rafters relocated Exception from Section R502.8.1 and limited notches:

- To cantilever length of 24 inches maximum
  - Measured at exterior face of supporting member
- To retain 3½ inches minimum depth of rafter member at rafter ends / tails
  - Measured parallel to rafter depth

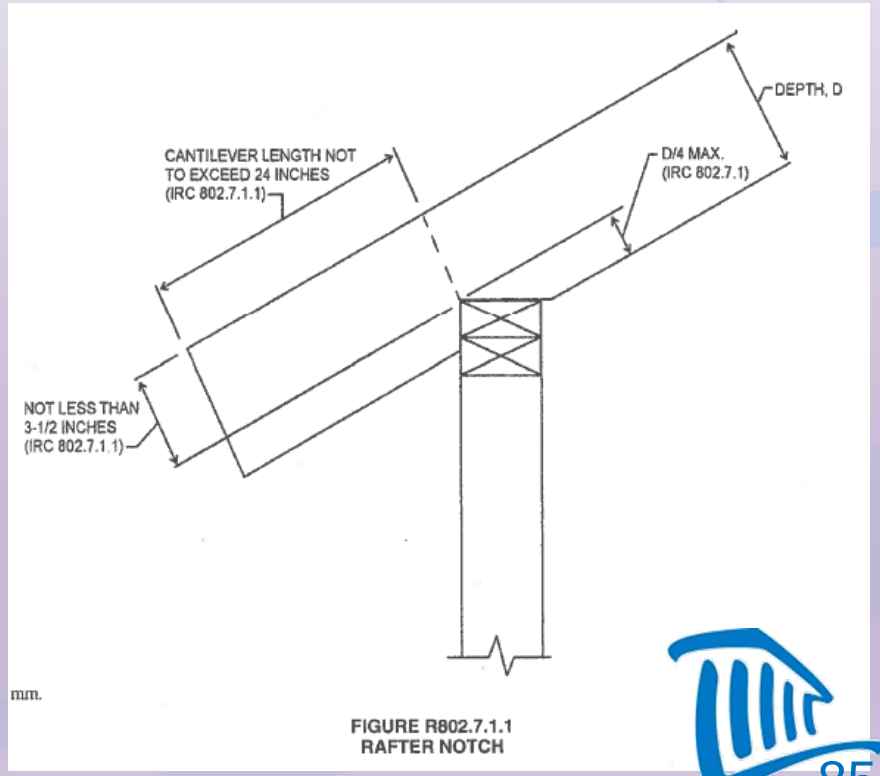


FIGURE R802.7.1.1
RAFTER NOTCH

R802.7.1 Sawn Lumber

Section R802.7.1.1 Ceiling Joist Taper Cut added and limited taper cuts:

- To ¼ depth maximum of ceiling joist member
  - Measured at interior face of supporting member

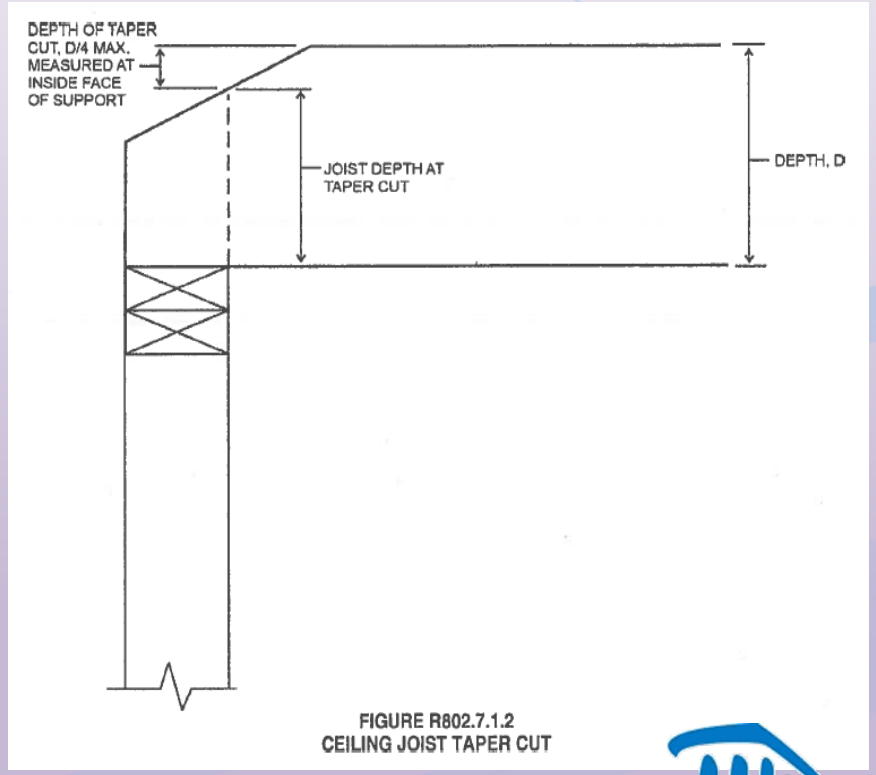


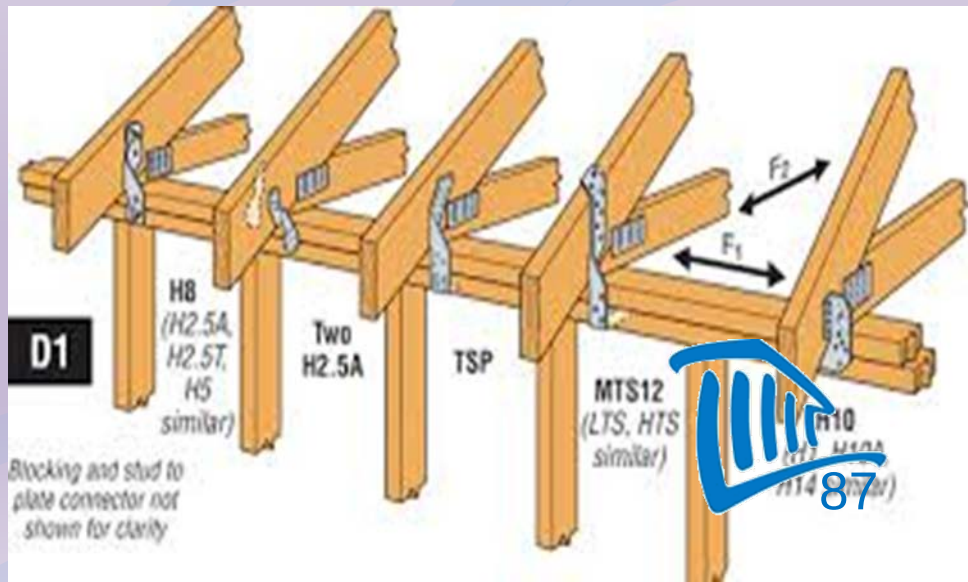
FIGURE R802.7.1.2
CEILING JOIST TAPER CUT

R802.11.1 Uplift Resistance

Roof assemblies, rafters, and trusses to attach to supporting wall assemblies and provide uplift resistance per Table 802.11 Rafter or Truss Uplift Connection Forces from Wind

Uplift forces to be determined by:

- Table R802.11 Rafter or Truss Uplift Connection Forces from Wind
- Accepted engineering practice
- Truss design drawings



R802.11.1 Uplift Resistance

Alternative allowed to comply with Table R602.3(1) Fastener Schedule for Structural Members where:

- Uplift force of 200 pound maximum
- Rafter or truss spacing of 24 inches oc maximum

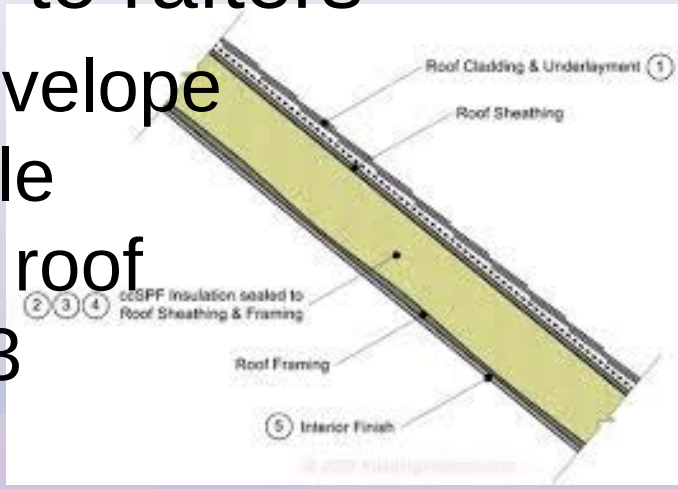
or where:

- Basic wind speed of 90 mph maximum
- Wind exposure category of B
- Roof pitch 5/12 minimum
- Roof span of 32 feel maximum
- Rafter or truss spacing of 24 inches oc maximum

R806.5 Unvented Attic and Unvented Enclosed Rafter Assemblies

Allows unvented enclosed rafter assemblies where ceiling is applied directly to rafters

- To be contained within building envelope
- Air-impermeable and air-permeable insulation directly under structural roof sheathing to be installed per 1 of 3 conditions
- ¼ inch vented air space to separate wood shingles or shakes and roof underlayment above structural sheathing
- Class I vapor retarders not to be installed on ceiling side of assembly

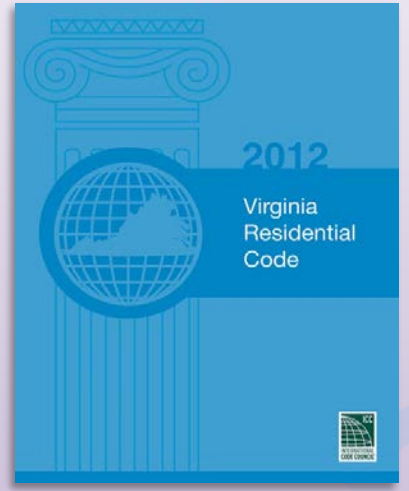


R806.5 Unvented Attic and Unvented Enclosed Rafter Assemblies

Condition 5.4 added to allow preformed insulation board as air-impermeable insulation layer

- Sealed at perimeter edges on ceiling side of each board to form continuous layer

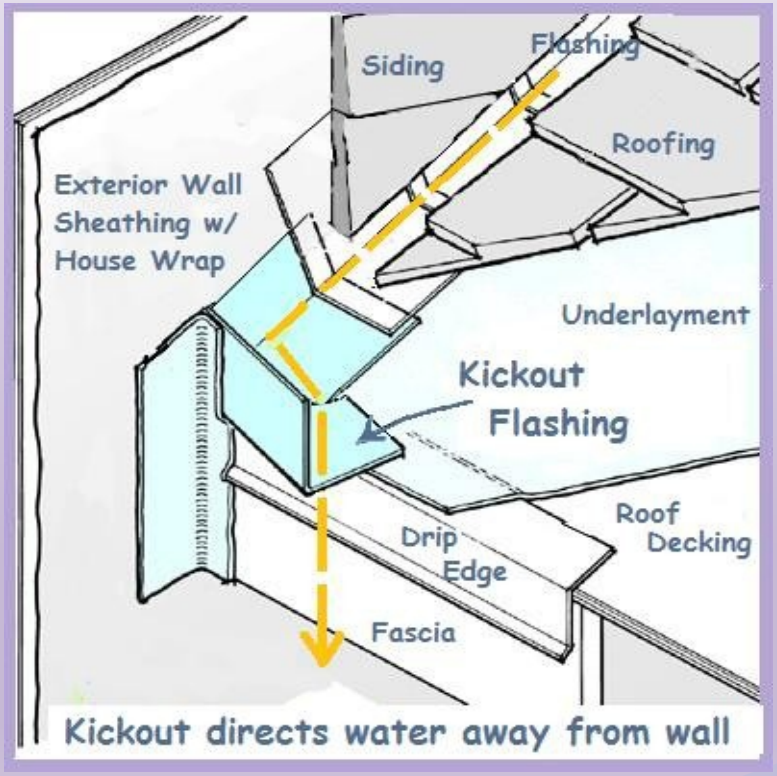
Chapter 9



Roof Assemblies

R903.2.1 Locations

Flashing to divert water from intersections of sloped roof eaves and vertical sidewalls



R905.2.8.3 Sidewall Flashing

Base flashing against vertical sidewall to direct water to roof or gutter and to be:

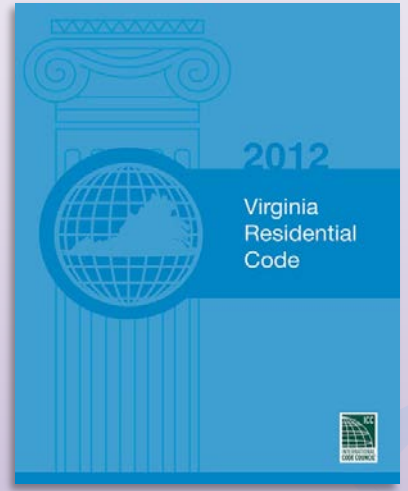
- Continuous or step method
- 4 inches in width
- 4 inches in height

and installed per:

- Section R703.6.3 Water-Resistive Barriers under exterior plaster or adhered masonry veneer
- Section R703.7.2.2 Support by Roof Construction under anchored masonry veneer
- Continuous method under siding

Section R905.2.8.5 Drip Edge deleted

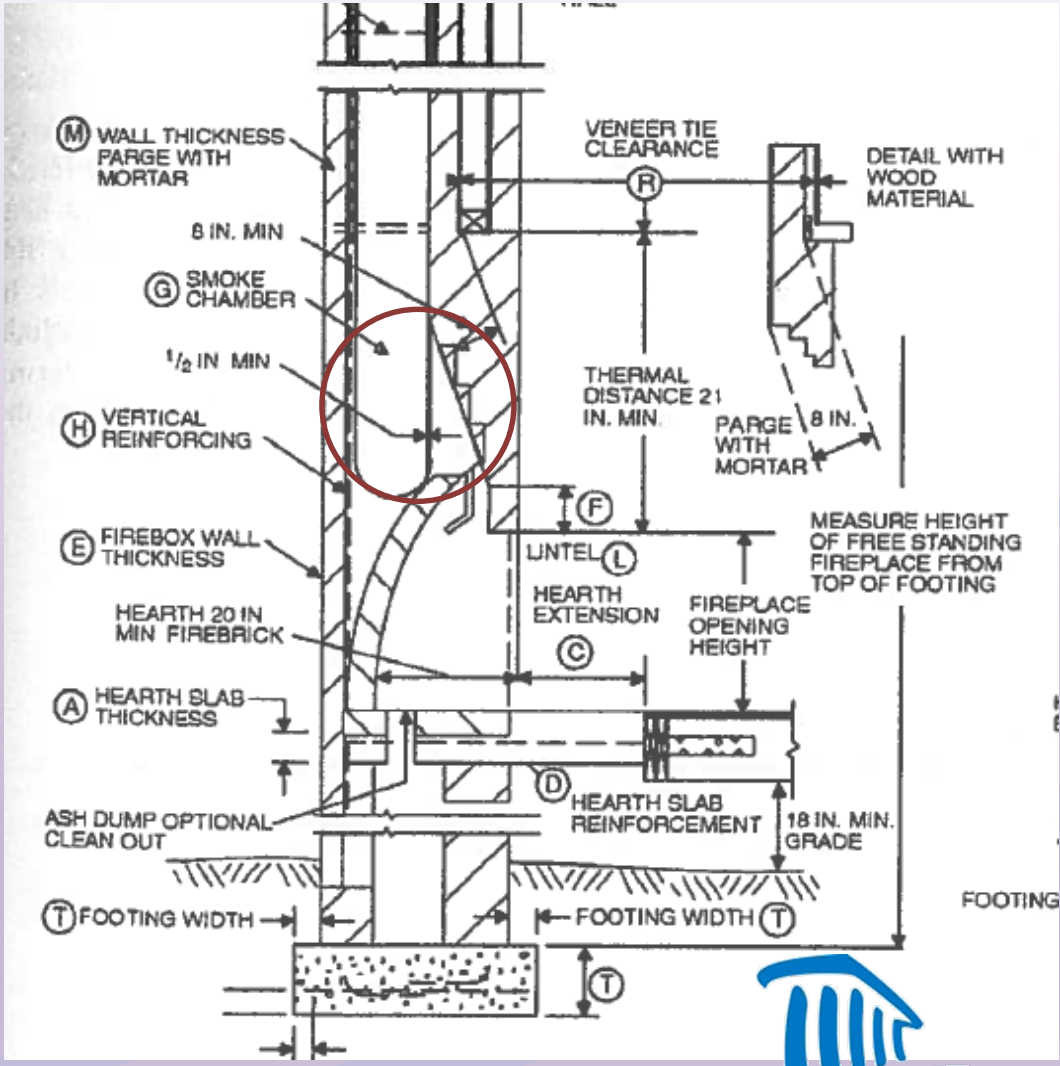
Chapter 10



Chimneys and Fireplaces

R1001.8 Smoke Chamber

Interior surfaces of masonry fireplace smoke chambers formed with corbelled masonry to be parged smooth



R1003.9 Termination

Section R1003.9.1 Chimney Caps on masonry chimneys to be provided of sloped concrete, metal, or stone with drip edges and caulked bond breaks around flue liners per ASTM C 1283

- Mandatory and required

Section R1003.9.3 Rain Caps of masonry or metal installed on masonry chimneys to allow net free area under caps of 4x net free area of chimney flue outlets served

- Not mandatory or required

Questions or Comments?

Thank you

Thanks and Credits to:

Jack A. Proctor Virginia Building Code Academy
Virginia Building Code Officials Association
Roger Robertson, JAPVBCA Instructor
Paula Eubank, Arlington County
Chuck Vernon, Arlington County
Chuck Bajnai, Chesterfield County
Richard Moore, Henrico County
Art Berkley, Isle of Wight
Caleb Sulzen, Louisa County