



## **2008 Top Residential Code Requirements**

The following are the most typical code requirements found at time of inspection to be in noncompliance with the 2007 Kentucky Residential Code which includes amendments to the 2006 International Residential Code. (*This is not a listing of all code requirements*).

1. **R105.2 Accessory Structures.** One-story detached accessory structures used as tool and storage sheds, playhouses, garages, carports, decks and similar uses, are required to have building permits when the floor area exceeds 120 square feet. **Accessory structures are limited in size to a maximum floor area not exceeding 3,000 square feet, and not be over two stories in height, and the use of which is customarily accessory to and incidental to that of the dwelling which is located on the same lot. (Section R202)**

2. **The following basic design criteria apply to single and two-family dwellings and accessory structures, and commercial buildings to be constructed in Hardin County, Kentucky:**

- **Wind limitations, 90 MPH wind speed.** Buildings and portions of buildings shall be limited by a basic wind speed of 90 miles per hour for all counties in Kentucky, and construction methods in accordance with this code. (R301.2.1)
- **Ground Snow Load: 15 psf** (Table R301.2.2.1)
- **Seismic Design Category: B.** (Table R301.2.2.1) **Detached one-and-two family dwellings and their accessory structures located in Seismic Design Categories A, B or C are exempt from the seismic requirements of this code. (page 9, 2007 Kentucky Residential Code, Amendments)**
- **Weathering probability shall be considered "Severe".** (Figure R301.2 (3) Weathering Probability Map.
- **Frost Line Depth: 24 inches below final grade.** (Table R403.1.4)
- **Termite Infestation Probability Map, Table R301.2(6)** All counties in Kentucky are deemed to be **"Moderate to Heavy"** for likelihood of damage from termite infestation. There has been a history of local subterranean termite damage.
- **Winter Design Temperature: 12 Degrees F** (Figure R301.2(1). Isoclines of the 97 ½ Percent Winter (December, January and February) Design Temperatures (Degrees F). (*Determined by Right Suite Version 6, Heating Load Calculation Software*) *This is a criterion for determining the need for dwelling unit heating (Section R308.8) as well as determining the need for freeze protection of piping (Sections M2301.2.5, and the Kentucky Plumbing Code.*
- **Local Floodplain Management Program for Hardin County, (Flood Insurance Rate Map 2007).** (R106.1.3.) *Anytime a project is proposed in or near a flood prone area, an application must be sent to the State Division of Water, Floodplain Management Section, for review. The Hardin County Engineer office currently handles flood plain management enforcement and can handle local questions pertaining to this subject.*
- **Air Freezing Index, 500.** Figure R403.3(2). An estimate of the 100-Year Return Period. *This figure provides the criteria necessary to apply the minimum insulation requirements of Table R404.3.*
- **Mean Annual Temperature : 56 Degrees** [National Climactic Data Center]

### **When inspections are required? Call in for the inspection at least 24 hours before scheduling concrete or pouring.**

1. **Post Hole footings** for decks, porches, landings & ramps, pole barn utility buildings, garages, (pier footings for manufactured homes), etc. – Call for the footing inspection after post or pier holes are excavated, **and** before the posts or piers are installed, **and** before dirt or concrete backfilling is done, **and before pouring concrete.**
2. **Footings. Call for the footing inspection before pouring concrete and when the following are completed and ready for inspection:**
  - A. When you have determined the soil has a minimum bearing load capacity of at least 1500 psf.;
  - B. Topsoil has been completely removed and the continuous footing (no gaps) is located in virgin soil (not disturbed by previous digging, not over dug, and not located on backfill).
  - C. The bottom of the footing is 24" below final grade of ground, and the footing extends at least 12" into undisturbed ground. When adding backfill above footing base to achieve 24" depth, the footing must be at least 12" into undisturbed ground, and the remaining 12" can be backfill.
  - D. The footing is dug in such a manner that the top surface of all footings will be level, and the bottom slope of the footing is no greater than 1:10. When greater than 1:10 slope, the footing must be stepped vertically correctly.
  - E. There is no standing water in the footing area.
  - F. There is no debris, and no roots located in the footing area.
  - G. The rebar reinforcing has been installed and sets on steel high chairs. (*No bricks, blocks or stones allowed*).
  - H. The electric "UFER" ground has been installed properly and is connected to the footing.
  - I. All rocks and boulders have been removed from the footing area. If on a solid rock shelf, stop there.
  - J. The temporary construction entrance and road tile and any required silt fencing and temporary drainage ditches have been installed.



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3. **Framing Inspection.** Call for the framing inspection when the building is enclosed and when the following are completed and ready for inspection:
  - A. Structural support, stairways installed, and framing members are still exposed.
  - B. Rough-in heating and cooling ducts are installed, the location of the furnace has been established, and the grilles and register openings are cut-in. The HVAC rough-in inspection has been completed and approved. (Where required).
  - C. The electrical rough-in has been completed and the inspection approved with an orange sticker on-site.
  - D. The plumbing rough-in has been completed and the green sticker is on-site.
  - E. The exterior sheathing and house wrap are completed. The wall insulation and vapor retarders may or may not have already been installed in walls.
  - F. The caulking and firestopping, and fire rated caulking have been installed.
  - G. No interior finishes (drywall, metal, lath, wallboard, finish flooring, or other finishes used to cover the structural framing) have been installed.
  - H. The attic and roof ventilation have been installed.
  - I. If foam continuous board is used for insulation, then prior to the brick veneer having been installed.
  - J. The brick veneer has been installed or is in progress.
  - K. The temporary construction entrance and road tile and any required silt fencing and temporary drainage ditches have been installed and maintained in compliance with Storm Water Runoff Ordinances.
  - L. Decks or porches. After framing is completed, decking is installed, stairs, guardrails and handrails are installed, If the deck or porch is covered with a roof, the framing inspection is required prior to installing any ceiling or wall finishes.
  - M. Owners have supplied ladders for hard to reach areas.
  - N. Hurricane tiedowns have been installed on roof rafters, and roof trusses. Joist hangars have been installed. Foundation bolts with washers and nuts have been installed.
  - O. The exterior doors and windows have been installed.
  
4. **Final Inspection.** Call for the final inspection before the building is occupied for any reason and when the following are completed and ready for inspection:
  - A. All interior and exterior finishes, painting, floor coverings and trims have been completed.
  - B. All on-site and off-site development of the structure has been completed and the structure is ready for occupancy or its intended use.
  - C. Final inspections of plumbing, mechanical, gas, septic system or sewer systems, and electrical systems have been completed and their approved sticker is on-site or other written verification of the inspection agency is on-site.
  - D. Exterior finish backfilling and final grading have been completed and all bare areas of lot have been sewn in grass seed and strawed for protection and to prevent runoff.
  - E. The street number has been installed on the front of the structure.
  - F. All interior and exterior stairways, decks, and entries are complete and guards and handrails have been installed.
  - G. The issues addressed in the final inspection cover all aspects of construction, including fire safety, life safety and structural safety. This applies to residential and commercial constructed structures.
  - H. The required energy code sticker has been completely and properly filled out and is in place in the electrical panel.
  - I. A safe entry can be gained into the structure by way of grass, sidewalks, and/or driveways. Entry can be gained to the interior of the house without having to go through the garage.
  
5. **The final inspection must be approved before the “Certificate of Occupancy” can be issued and before the house or structure can be occupied or used.**
  
6. **When commercial construction is involved, all required items listed on the Development Plan must be completed before applying for the final inspection and prior to occupying the structure or site for any approved use.**

### 7. Other Inspection Related Information:

- Inspections are scheduled Monday thru Friday by contacting the Hardin County Planning and Development Commission at (270) 769-5479 before 4:00 pm on the previous day before the inspection is needed. The homeowner and Builder are each responsible for calling to request the inspection. (R109.3). It is the duty of the person requesting any inspection required by this code to provide access to and means for inspection of such work.
- Provide the name the permit was issued in, the street location of the project, the nearest existing street number if a permanent street number has yet to be assigned to this site; and the phone number of a contact person when calling for inspections.
- If the inspector needs to return to the jobsite in follow-up for the same inspection, a \$25 Reinspection fee is required to be paid at the office prior to the inspection being rescheduled. No Reinspection on the same phase of construction shall be done in the same 24-Hour time period.
- **EXPIRATION.** (R105.5) Every building permit issued shall become invalid unless the work is started within 180 days after its issuance, or if the work authorized on the site by such permit is suspended or abandoned for a period of 180 days after the time the work is commenced.
- **PLACEMENT OF PERMIT.** (R105.7) The building permit or copy shall be kept on site of the work until the completion of the project. (The permit shall be placed where it is visible from the street).



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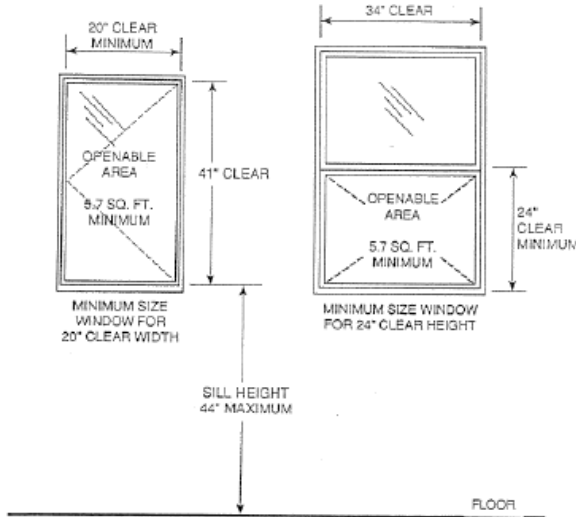
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8. **Attics with limited storage. Table R301.5** For attics with limited storage and designed with trusses, a 20 lb. live load is required and need be applied only to those portions of the bottom chord where there are two or more adjacent trusses with the same web configuration capable of containing a rectangle 42 inches high by 2 feet wide, or greater, located within the plane of the truss.
1. The rectangle shall fit between the top of the bottom chord and the bottom of any other truss member, provided that each of the following criteria is met:
    1. The attic area is accessible by a pull-down stairway or framed opening in accordance with Section R807.1; and
    2. The truss has a bottom chord pitch less than 2:12.
  2. Attic spaces served by a fixed stair shall be designed to support the minimum live load specified for sleeping rooms. (This is 30 lb. live load).
9. **Stairway Illumination. R303.6** All interior and exterior stairways shall be provided with a means to illuminate the stairs, including the landings and treads.
10. **Light activation at stairways. R303.6.1** Where lighting outlets are installed in interior stairways, there shall be a wall switch at each floor level to control the lighting outlet where the stairway has 6 or more risers. The illumination of exterior stairways shall be controlled from inside the dwelling unit. *Exception: Lights that are continuously illuminated or automatically controlled.*
11. **Ceiling Height. R305** Habitable rooms, hallways, corridors, bathrooms, toilet rooms and basements shall have a **ceiling height of not less than 7 feet**. The measurement is from the finished floor to the lowest projection from the ceiling.
- Exceptions:
- a. Beams and girders spaced not <4' on center may project not more than 6" below the required ceiling height.
  - b. **Ceilings in basements without habitable spaces minimum height 6 feet 8 inches** above finished floor; and beams, girders, ducts or other obstructions no less than 6 feet 4 inches of finished floor.
  - c. **For rooms with sloped ceilings, at least 50% of required floor area of room, 7 foot min. height; and no portion of required floor area less than 5 feet ceiling height.**
  - d. **Bathrooms shall have a minimum ceiling height of 6' – 8" over the fixture and at the front clearance areas for fixtures as shown in Figure R307.1 Minimum Fixture Clearances. A shower or tub equipped with a showerhead shall have minimum ceiling height of 6'-8" above a minimum area of 30" by 30" at the showerhead.**
12. **Glazing. R308.** For detailed requirements on when tempered (safety) glass is required in windows and doors, skylights, and at hazardous locations ask for the handout on *Windows and Doors - Safety Glass* from our office.
13. **Garages and Carports. R309**
- Openings from a private garage into a room used for sleeping are not permitted.
  - Other openings between the garage and residence shall be equipped with solid wood doors, 1 3/8" thick, solid or honeycomb core steel doors not less than 1 3/8" thick, or 20 minute fire-rated doors.
14. **Duct Penetration. R309.1.1** Ducts in the garage and ducts penetrating the walls or ceilings separating the dwelling from the garage shall be constructed of a minimum No. 26 gage sheet steel or other approved material **and shall have no openings into the garage.**
15. **Other Penetrations R309.1.2** Penetrations through the separation required in Section R309.2 shall be protected by filling the opening around the penetrating item with approved material to resist the free passage of flame and products of combustion. (E.g. fire-rated caulk).
16. **Separation Required. R309.2** The garage shall be separated from the residence and its attic area by not less than ½ inch gypsum board applied to the garage side.
- Garages beneath habitable rooms shall be separated from all habitable rooms above by not less than 5/8" Type X gypsum board.
  - Where the separation is a floor ceiling assembly the structure supporting the separation shall also be protected by not less than ½ inch gypsum board.
  - located not less than 3 feet from a dwelling unit on the same lot shall be protected with not less than ½ inch gypsum board applied to the interior side of exterior walls that are within this area.
17. **Floor Surface. R309.3 Garage floor surfaces** shall be of approved noncombustible material (example: concrete). The area of floor used for parking of automobiles or other vehicles shall be sloped to facilitate the movement of liquids to a drain or toward the main vehicle entry doorway.



18. **Emergency Escape and Rescue Openings. R310.1** Every sleeping room shall have at least one operable emergency and rescue opening. Such opening shall open directly into a public street, public alley, yard or court. Where basements contain one or more sleeping rooms, emergency egress and rescue openings shall be required in each sleeping room, but shall not be required in adjoining areas of the basement.

1. Where emergency escape and rescue openings are provided they shall have a sill height of not more than 44 inches above the floor.



2. Where a door opening having a threshold below the adjacent ground elevation serves as an emergency escape and rescue opening and is provided with a bulkhead enclosure, the bulkhead enclosure shall comply with Section R310.3.
3. The net clear opening dimensions required by this section shall be obtained by the normal operation of the emergency escape and rescue opening from the inside.
4. Emergency escape and rescue openings with a finished sill height below the adjacent ground elevation shall be provided with a window well in accordance with Section R310.2.
5. Emergency escape and rescue openings shall open directly into a public way, or to a yard or court that opens to a public way.

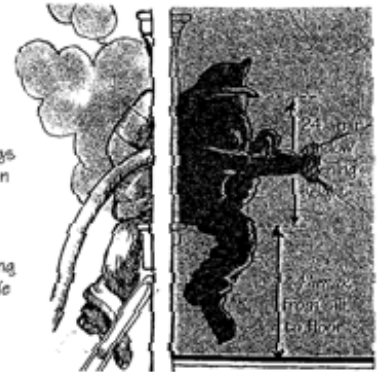
19. **Minimum opening area.** All emergency escape and rescue openings shall have a minimum net clear opening of 5.7 square feet. *Exception: Grade floor openings shall have a minimum net clear opening of 5 square feet. (R310.1.1)*

20. **Minimum opening height.** The minimum net clear opening height shall be 24 inches. (R310.1.2) *The minimum height is based on the height necessary to admit a firefighter with full rescue equipment including breathing apparatus.*

21. **Minimum opening width.** The minimum net clear opening width shall be 20 inches. (R310.1.3) *The minimum width is based on 2 criteria: the width necessary to place a ladder within the window opening and the width necessary to admit a firefighter with full rescue equipment including breathing apparatus.*

Fig. b12  
 Bedroom Window  
 Egress

*The second exit required in a bedroom is usually a window. The dimensions of the openings are to ensure the residents an escape route, but equally important, they are designed to allow a firefighter with a backpack to enter. This opening must be 24" high and 20" wide min. (bt-5). The window sill must not be higher than 44" from the floor.*



**Bedroom Egress Window: Minimum width and height requirements [in inches]**

<i>width</i>	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34
<i>height</i>	41	39.25	37.5	35.25	34.25	33	31.75	30.50	29.5	28.5	27.5	26.5	25.75	25	24

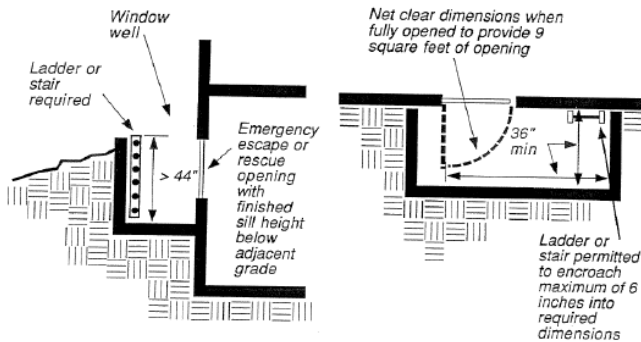
22. **Operational constraints.** These egress window openings shall be operational from the inside of the room without the use of keys, tools or special knowledge. (R310.1.4)



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23. **Window Glazing in Fixed Panels:** [R308.4, Item 6] Safety glazing (tempered glass) shall be required when the following conditions exist:
- With panes exceeding nine square feet, AND
  - Where the lowest edge is less than 18 inches off the floor, AND
  - Where the top edge is greater than 36 inches above the floor, AND
  - The walking surface is within 36 inches of glazing.
  - Safety glazing is required EXCEPT when the glazing is protected by a 1 ½ inch minimum high horizontal bar located 36 inches above the walking surface. The bar must be capable of withstanding a horizontal load of 50 lbs./linear foot without contacting the glass.
24. **Emergency escape windows under decks and porches R310.5** are allowed provided the location of the deck allows the emergency escape window to be fully opened and provides a path not less than 36 inches in height to yard or court.
25. **Window wells. R310.2.** The minimum horizontal area of the window well shall be 9 square feet, with a minimum horizontal projection and width of 36 inches. The area of the window well shall allow the emergency escape and rescue opening to be fully opened.

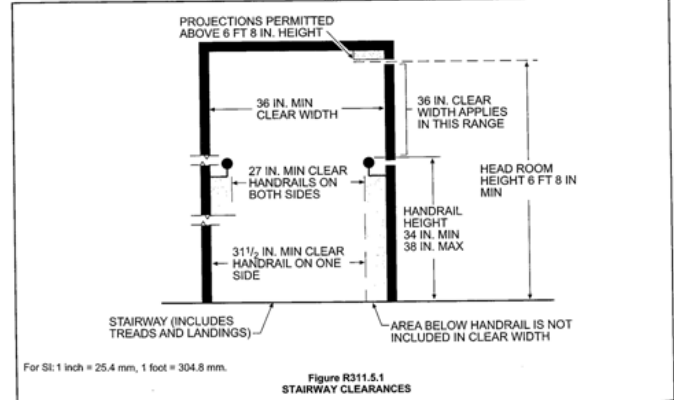


26. **Attachment. R311.2.2.1** Required exterior egress balconies (example: decks or porches), exterior exit stairways and similar means of egress components shall be positively anchored to the primary structure to resist both vertical and lateral forces. Such attachment shall not be accomplished by use of toenails or nails subject to withdrawal. (Use lag screws or combination through bolts approved for use with pressure treated wood).
27. **Under Stair Protection. R311.2.2** Enclosed accessible space under stairs shall have walls, under stair surface, and any soffits protected on the enclosed side with ½ inch gypsum board. *If the area under the stairs is not enclosed, is left open to the rest of the room, not walled in, the under stair protection is not required.*
28. **Hallways. R311.3** The minimum width of a hallway shall be not less than 3 feet.
29. **Doors. R311.4** Not less than one exit door conforming to this section shall be provided for each dwelling unit.
- The required exit door shall provide for direct access from the habitable portions of the dwelling to the exterior without requiring travel through a garage.
  - Access to habitable levels not having an approved exit door shall be by a ramp in accordance with Section R311.6 or a stairway in accordance with Section R311.5.
  - The required exit door shall be a side-hinged door, not less than 3' wide and 6'-8" in height. Other doors shall not be required to comply with these dimensions.
  - A floor or landing is required on each side of each exterior door. The floor or landing at exterior door shall not be more than 1.5 inches lower than the top of the threshold.
  - The width of each landing shall not be less than the door served. Minimum dimension of 36" measured in the direction of travel.
  - All egress doors shall be readily openable from the side from which egress is made without the use of a key or special knowledge or effort.
30. **Stairways. R311.5**  
Stairways shall be built in compliance with Section R311.5.1 through Section R311.5.8.

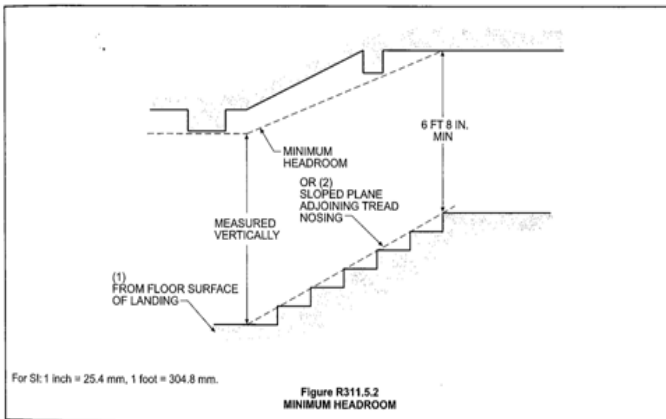


31. **Stairways Width. R311.5.1** Stairs shall not be less than 36 "in clear width at all points above the permitted handrail height and below the required headroom height.

- **Handrails shall not project more than 4.5"** on either side of the stairway and the minimum clear width of the stairway at and below the handrail height, including treads and landings, shall not be less than 31.5 inches where a handrail is installed on one side and 27 inches where handrails are provided on both sides. *Exception: The width of spiral stairways, Minimum of (26"), shall be in accordance with Section R311.5.8.*



31. **Headroom. R311.5.2** The minimum headroom in



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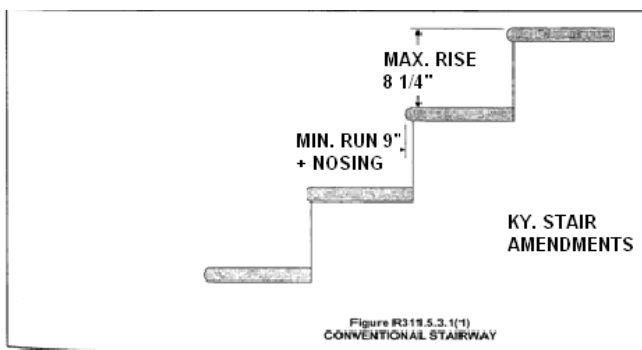
**all parts of the stairway shall not be less than 6 feet eight inches measured vertically from the sloped plane adjoining the tread nosing or from the floor surface of the landing.**

32. **Stair Riser Height. R311.5.3.1** The maximum riser height shall be 8 1/4" rise. The greatest riser height within any flight of stairs shall not exceed the smallest by more than 3/8".

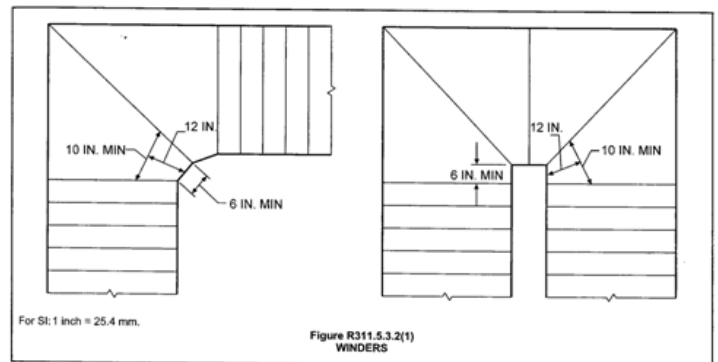
33. **Stair Tread Depth. R311.5.3.2** The minimum tread depth shall be 9". [plus minimal nosing profile (using 3/4"

min. nosing up to 1 1/4" max. nosing)]. 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".
- **Winder treads shall have a minimum tread depth of 10 inches measured as above at a point 12 inches from the side where the treads are narrower. Winder treads shall have a minimum tread depth of 6 inches at any point.**
- Within any flight of stairs, the largest winder tread depth at the 12 inch walk line shall not exceed the smallest by more than 3/8 inch.



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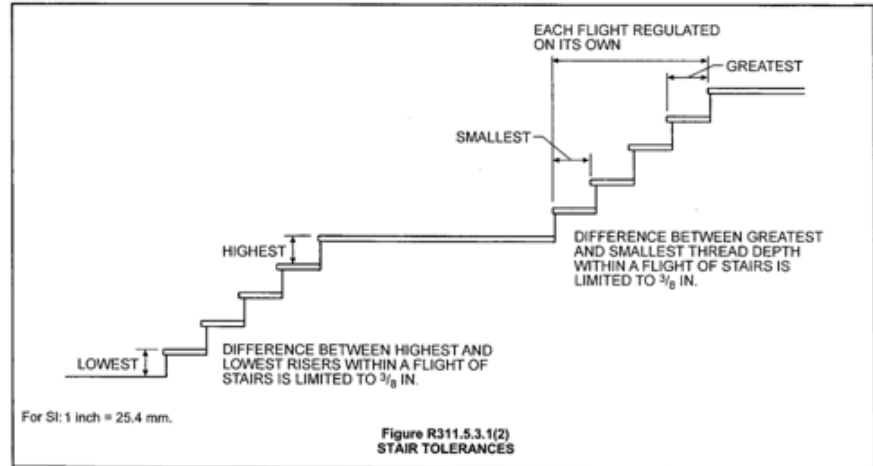


34. **Stair Profile. R311.5.3.3** The radius of curvature at the leading edge of the tread shall be no greater than 9/16 inch.

- **A nosing not less than 3/4 inch but not more than 1 1/4 inch shall be provided on stairways with solid risers.**
- The greatest nosing projection shall not exceed the smallest by more than 3/8 inch between two stories, including the nosing at the level of floors and landings. **These limitations apply to not only the nosings on the stair treads, but also to nosings at the level of floors or landings that are a part of the stairway.**
- Beveling of nosing shall not exceed 1/2 inch. Risers shall be vertical or sloped from the underside of the leading edge of the tread above at an angle not more than 30 degrees from the vertical.
- **Open risers are permitted, provided that the opening between treads does not permit the passage of a 4-inch diameter sphere. Exceptions: 1. A nosing is not required where the tread depth is a minimum of 11 inches. 2. The opening between adjacent treads is not limited on stairs with a total rise of 30 inches or less.**



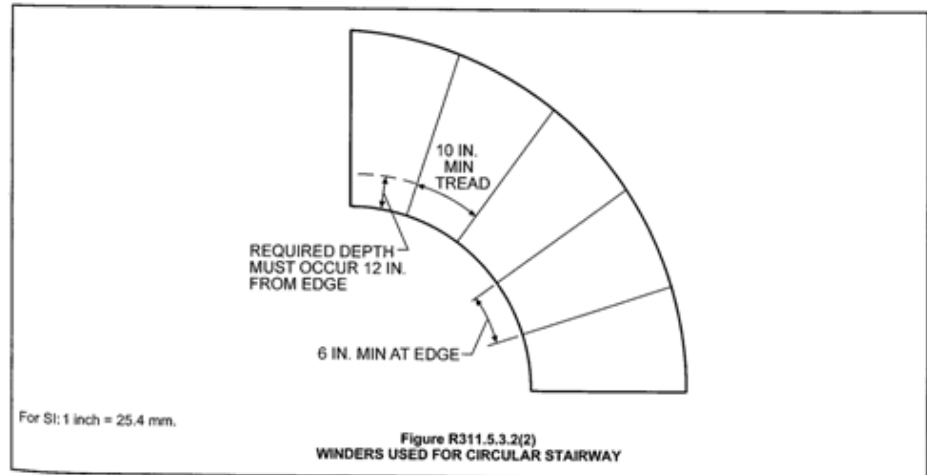
35. **Landings for stairways. R311.5.4** There shall be a floor or landing at the top and bottom of each stairway. *Exception: A floor or landing is not required at the top of an interior flight of stairs, including stairs in an enclosed garage, provided a door does not swing over the stairs.*
- A flight of stairs shall not have a vertical rise larger than 12 feet 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 measured in the direction of travel.**



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36. **Stairway Walking Surface R311.5.5** of treads and landings shall be sloped no steeper than one unit vertical in 48 inches horizontal (2% slope).



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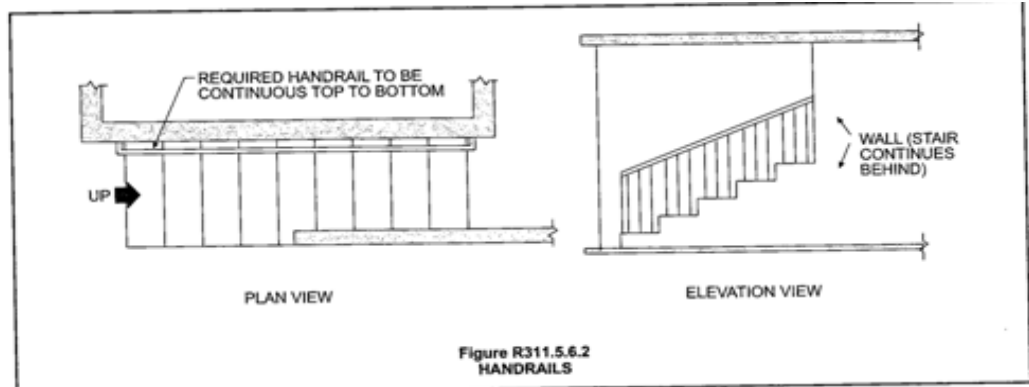
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37. **Handrails. R311.5.6** Handrails shall be provided on at least one side of each continuous run of treads or flight with four or more risers.
38. **Handrail Height. R311.5.6.1** Handrail height, measured vertically from the sloped plane adjoining the tread nosing, or finish surface of ramp slope, shall be not less than 34 inches and not more than 38 inches. *This height should be measured to the top of the handrail at the point that it is directly above the nosing.*



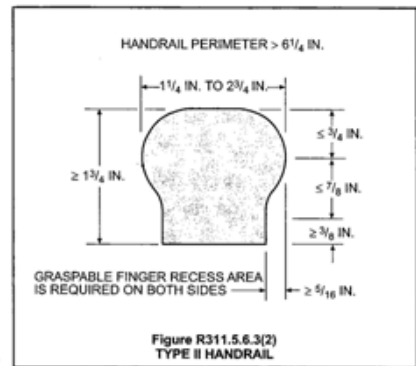
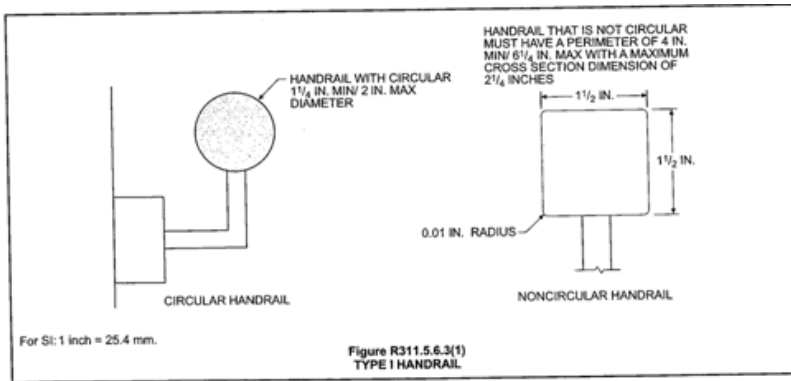
**39. Handrail Continuity. R311.5.6.2** Handrails for stairways shall be continuous for the full length of the flight, from a point directly above the top riser of the flight to a point directly above the lowest riser of the flight.

- 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 ½ inch 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. The term “continuous” means not only that a single handrail must run from the top riser to the bottom riser, but it also indicates that users should be able to grasp the handrail and maintain their grasp without having to release the rail where it is supported.*



**40. Handrail Grip Size. R311.5.6.3** All required handrails shall be one of the following types or provide equivalent graspability.

1. **Type I. Handrails** with a circular cross section shall have an outside diameter of at least 1 ¼ inches and not greater than 2 inches. If the handrail is not circular it shall have a perimeter dimension of at least 4 inches and not greater than 6 ¼ inches with a maximum cross section dimension of 2 ¼ inches.



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2. **Type II. Handrails** with a perimeter greater than 6 ¼ inches shall provide a graspable finger recess area on both sides of the profile. The finger recess shall begin within a distance of ¾ inch measured vertically from the tallest portion of the profile and achieve a depth of at least 5/16 inch within 7/8 inch below the widest portion of the profile. The minimum width of the handrail above the recess shall be 1 ¼ inches to a maximum of 2 ¾ inches. Edges shall have a minimum radius of 0.01 inch.

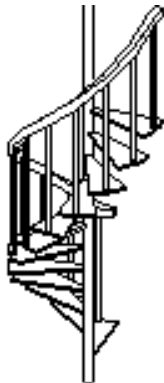
**41. Illumination. R311.5.7** All stairs shall be provided with illumination in accordance with Section R303.6. [See page 1].



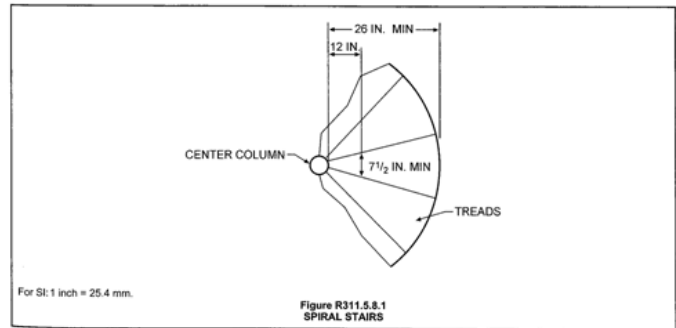
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42. **Spiral stairways. R311.5.8.1** The minimum width shall be 26 inches with each tread having a 7 ½ inches minimum tread depth at 12 inches from the narrower edge. All treads shall be identical, and the rise shall be no more than 9 ½ inches. A minimum headroom of 6 feet 6 inches shall be provided.



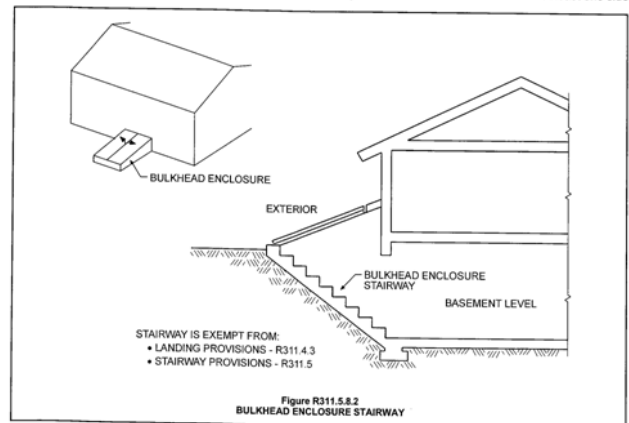
Spiral



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43. **Bulkhead Enclosure Stairways. R311.5.8.2** 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 R311.4.3 and R311.5 where the maximum height from the basement finished floor level to grade adjacent to the stairway does not exceed 8 feet, and the grade level opening to the stairway is covered by a bulkhead enclosure with hinged doors or other approved means.



3-72

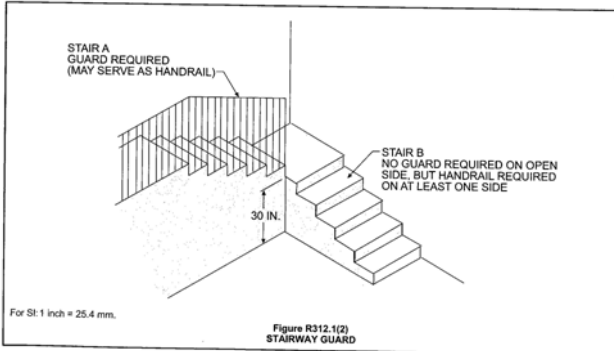
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44. **Ramps. R311.6.1** Ramps shall have a maximum slope of one unit vertical in 12 units horizontal (8.3 percent slope). Exception: Where it is technically infeasible to comply because of site constraints, ramps may have a maximum slope of one unit vertical in eight horizontal (12.5 percent slope).

- Landings required. A minimum of 3-foot by 3-foot landing shall be provided: 1. At the top and bottom of ramps. 2. Where doors open onto ramps. 3. Where ramps change directions. [R311.6.2]
- Handrails required. Handrails shall be provided on at least one side of all ramps exceeding a slope of 1:12 (8.33 percent slope). [R311.6.3]
- Height: no less than 34 inches, and no more than 38 inches. [R311.6.3.1].
- Handrail grip size shall comply with Section R311.5.6.3. [R311.6.3.2].
- 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 1.5 inches between the wall and the handrails. [R311.6.3.3].

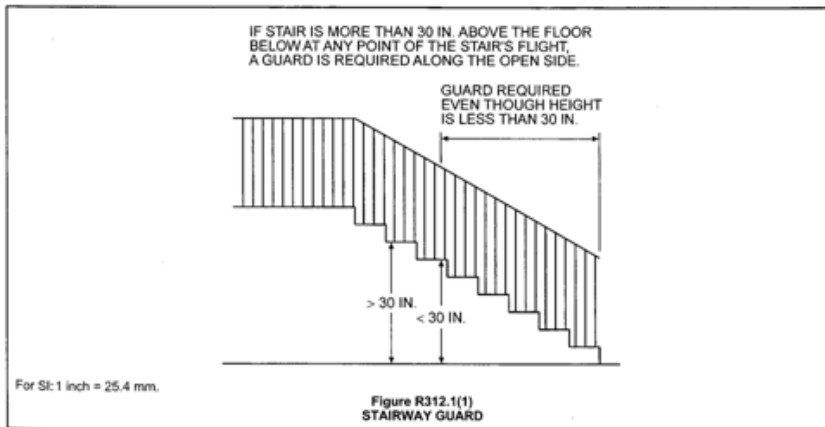
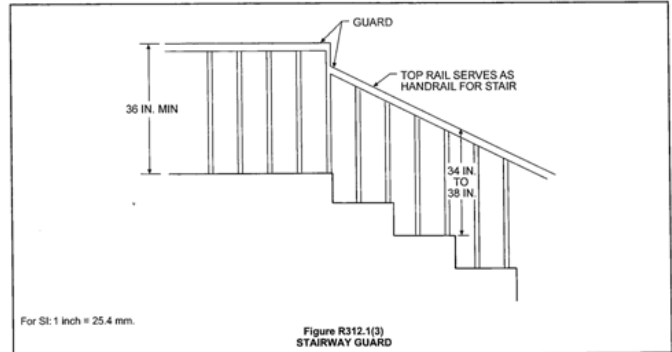


45. **Guards. R312** Porches, balconies, ramps, or raised floor surfaces located more than 30 inches above the floor or grade below shall have guards not less than 36 inches in height. Open sides of stairs with a total rise of more than 30 inches above the floor or grade below shall have guards not less than 34 inches in height measured vertically from the nosing of the treads. Porches and decks enclosed with insect screening shall be equipped with guards where the walking surface is located more than 30 inches above the floor or grade below.



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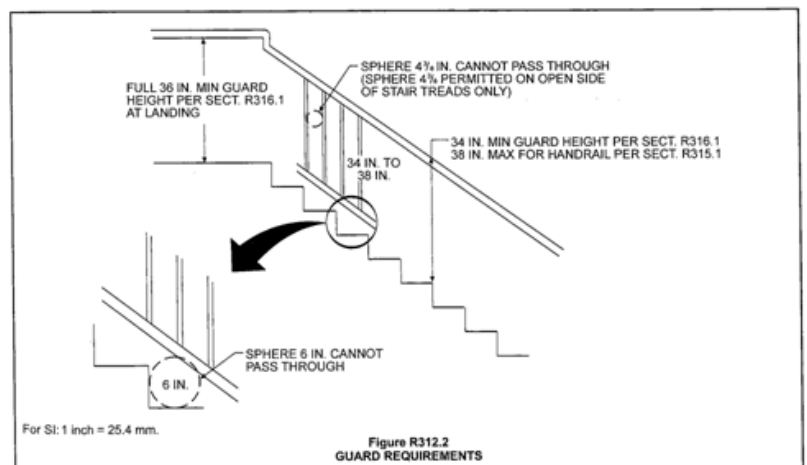
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47. **Guard opening limitations. R312.2** Required guards on open sides of stairways, raised floor areas, balconies and porches shall have intermediate rails or ornamental closures which do not allow passage of a sphere 4 inches or more in diameter.

**Exceptions.**

1. The triangular openings formed by the riser, tread and bottom rail of a guard at the open side of a stairway are permitted to be of such a size that a sphere 6 inches cannot pass through.
2. Openings for required guards on the sides of stair treads shall not allow a sphere 4 3/8 inches to pass through.



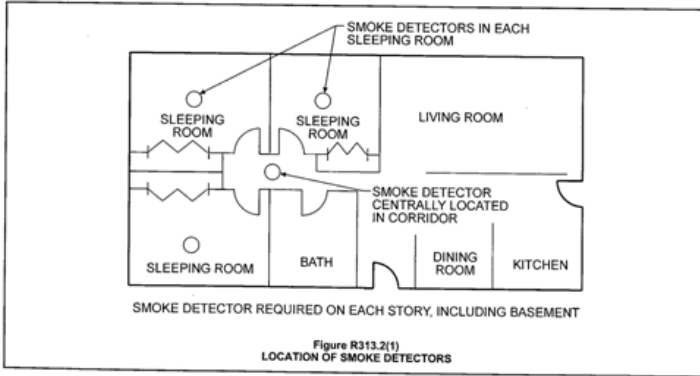
46. **Guards at Retaining Walls. R312.3 (Kentucky Amendments).** Where retaining walls with differences in grade level on either side of the wall is in excess of 30 inches and are located closer than 3 feet to a walk, designated walking path or driveway on the high side, such retaining walls shall be provided with guards that are constructed in accordance with Section R312.1 and R312.2.



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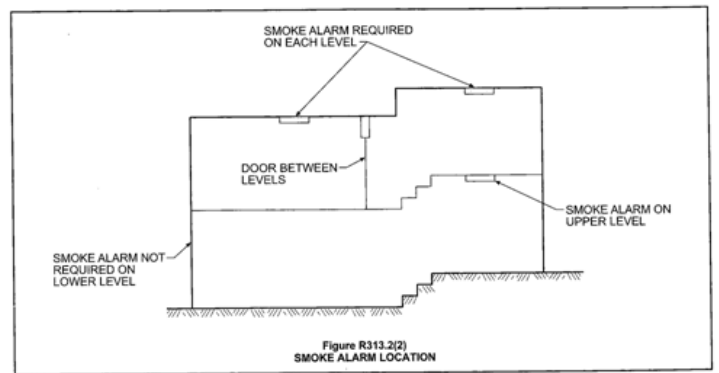
48. **Smoke Alarms. R313.1** All smoke alarms shall be listed in accordance with UL 217 and installed in accordance with the provisions of this code and the household fire warning equipment provisions of the NFPA 72.



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49. **Location. R313.2** Smoke alarms shall be installed in the following locations:
1. In each sleeping room.
  2. Outside each sleeping area in the immediate vicinity of the bedrooms.
  3. On each additional story of the dwelling, including basements, but not including crawl spaces and uninhabitable attics. In dwellings or dwelling units with split levels and without an intervening door between the adjacent levels.
  4. When more than one smoke alarm is required to be installed within an individual dwelling unit the alarm devices shall be interconnected in such a manner that the actuation of one alarm will activate all the alarms in the individual unit.



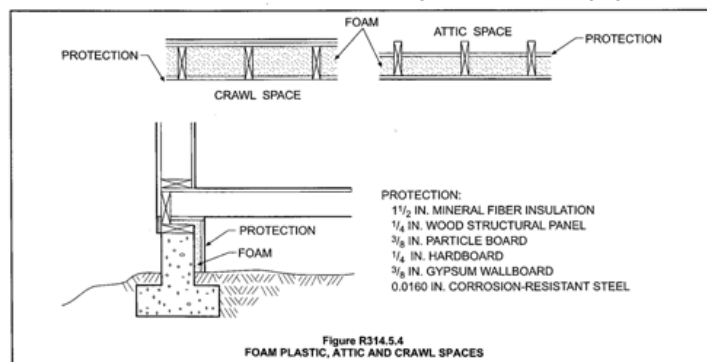
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49. **Power Source. R313.3** Required Smoke alarms shall receive their primary power from the building wiring... and when the power is interrupted, shall receive power from a battery.

50. **Foam Plastic. R314.** Foam plastic shall be separated from the interior of a building by an approved thermal barrier of minimum 1/2 inch gypsum wallboard or an approved finish material equivalent to a thermal barrier material that will limit the average temperature rise of the unexposed surface to no more than 250 degrees F, for 15 minutes of fire exposure, while complying with the time-temperature conditions of ASTM E-119, and as specifically described in R314.4 and R314.5 The gypsum board shall be installed using a mechanical fastening system in accordance with Table R602.3(1). *[This applies to the foam left exposed in basements, crawl spaces, etc. of ICF (insulated concrete form) walls, as well as pink board and blue board foam board sheathing exposed on the inside of the exterior walls and attics of houses.]*

- **Masonry or Concrete Walls.** The thermal barrier is not required in a masonry or concrete wall, floor or roof when the foam plastic insulation is separated from the interior of the building by a minimum 1-inch thickness of masonry or concrete. (R314.5.1)
- **Roofing. R314.5.2.** The thermal barrier is not required when the foam plastic in a roof assembly or under a roof covering is separated from the interior of a building by tongue-and-groove wood planks or wood structural panel sheathing in accordance with Section R803, not less than 15/32 inch thick bonded with exterior glue, and installed to provide adequate edge support (blocking when edges do not occur over framing members, tongue and groove joints or equivalent). Also the flame spread rating of the foam plastic used must comply with the requirements of Section R314.3, but the smoke developed rating for roof applications of the foam plastic is not limited.
- **Attics. R314.5.3** The thermal barrier is not required where attic access is required by R807.1 and where the space is entered only for service of utilities (attics containing mechanical equipment, electrical wiring, fans, plumbing, gas or electric furnaces, hot water heaters, etc.) and when the foam plastic insulation is protected against ignition **using one of the following ignition barrier materials:** 1.5" thick mineral fiber insulation; 0.25 inch thick wood structural panels; 0.375 inch thick particleboard; 0.25 inch hardboard; 0.375 inch gypsum board, or corrosion-resistant steel having a base metal thickness of 0.016 inch. The attic space cannot be used for storage. The above ignition barrier is not required when the foam plastic





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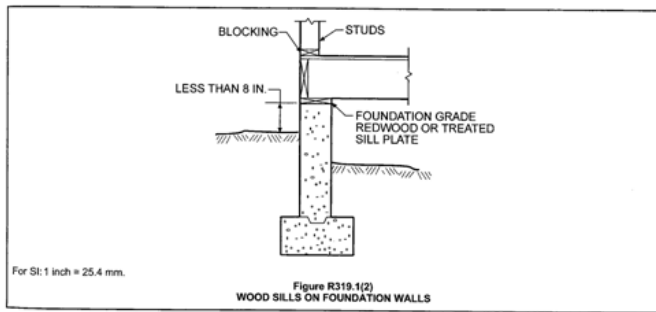
insulation has been tested in accordance with R314.6

- **Crawl spaces. R314.5.4** The thermal barrier specified in Section R314.4 is not required where crawlspace access is required by Section R408.4 (access shall be provided to all under-floor spaces) and entry is only for service of utilities, and the foam plastic insulation is protected against ignition **using one of the following ignition barrier materials:** 1 ½ inch mineral fiber insulation, ¼ inch wood structural panel, 3/8 inch particleboard, ¼ inch hardboard, 3/8 inch gypsum wallboard, or 0.0160 inch corrosion-resistant steel.
- **Specific Approval. R314.6** Foam plastic not meeting the requirements of Sections R314.3 through R314.5 shall be specifically approved on the basis of one of the following: NFPA 286 with the acceptance criteria of Section R315.4, FM4880, UL 1040 or UL 1715, or fire tests related to actual end-use configurations. There are two ways to show code compliance under this section. The first method is to provide the actual test report that contains a description of the assembly and test results showing that the foam plastic, in the end-use application, has passed the test. The second method is to obtain from the ICC-ES, an Evaluation Report that covers the end-use application.

51. **Dwelling Unit Separation. R317** Dwelling units in two-family dwellings shall be separated from each other by wall and/or floor assemblies having not less than 1-hour fire resistance rating when tested in accordance with ASTM E119. Fire resistance rated floor ceiling and wall assemblies shall extend to and be tight against the exterior wall, and wall assemblies shall extend to the underside of roof sheathing.

52.. **Supporting construction. R317.1.1** When floor assemblies are required to be fire-resistance-rated by Section R317.1, the supporting construction of such assemblies shall have an equal or greater fire-resistive rating.

53. **Moisture Control. R318.1** In all framed walls, floors, and roof/ceilings comprising elements of the building thermal envelope, a vapor retarder shall be installed on the warm-in-winter side of the insulation. **Exception #3: In counties identified as in Climate Zone 1 through 4, in Table N1101.2. (This includes all of the counties in Kentucky). (Therefore a vapor retarder is not required in Hardin County or Larue County, also un-faced insulation is approved).**

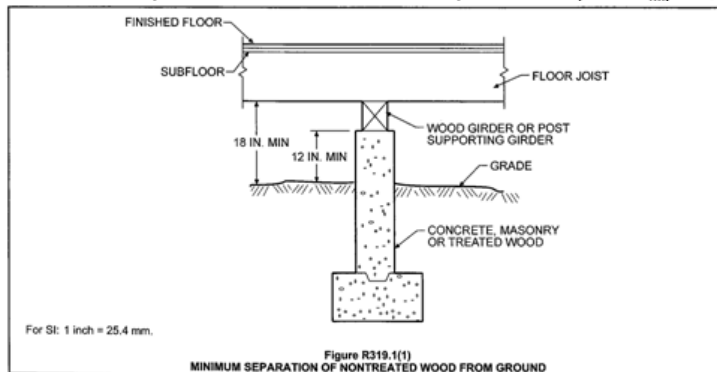
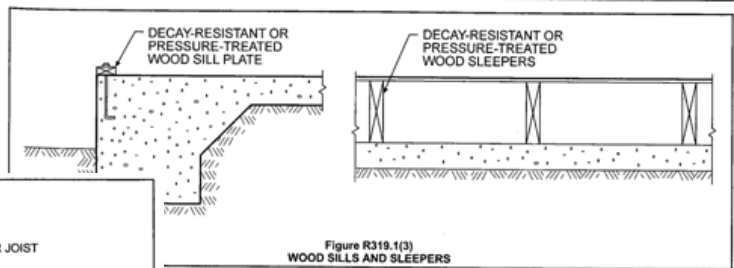


54. **Protection against decay. R319. Location required.** Protection from decay shall be provided in the following locations by the use of naturally durable wood or wood that is pressure preservative treated in accordance with AWPA for the species...

1. Wood joists or the bottom of a wood structural floor when closer than 18 inches or wood girders when closer than 12 inches to the exposed ground in crawl spaces or

unexcavated area located within the periphery of the building foundation.

2. All wood framing members that rest on concrete or masonry exterior foundation walls and are less than 8 inches from the exposed ground.
3. Sills and sleepers on a concrete or masonry slab that is in direct contact with the ground unless separated from such slab by an impervious moisture barrier.
4. **The ends of wood girders entering exterior masonry walls or concrete walls having clearances of less than ½ inch on top, sides and ends.**
5. Wood siding, sheathing and wall framing on the exterior of a building having clearance of less than 6 inches from the ground.
6. Wood structural members supporting moisture-permeable floors or roofs that are exposed to the weather, such as concrete or masonry slabs, unless separated from such floors or roofs by an impervious moisture barrier.
7. Wood furring strips or other wood framing



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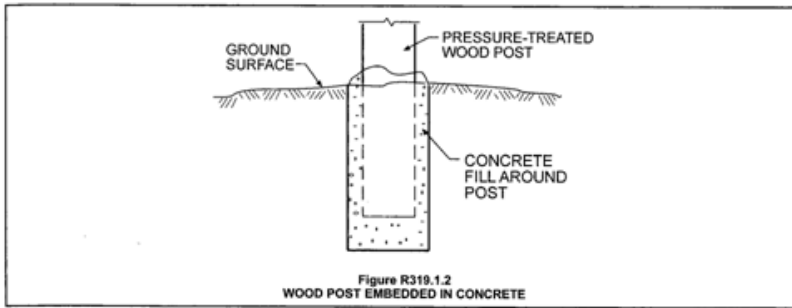
members attached directly to the interior of exterior masonry or concrete walls below grade except when an approved vapor retarder is applied between the wall and the furring strips or framing members.



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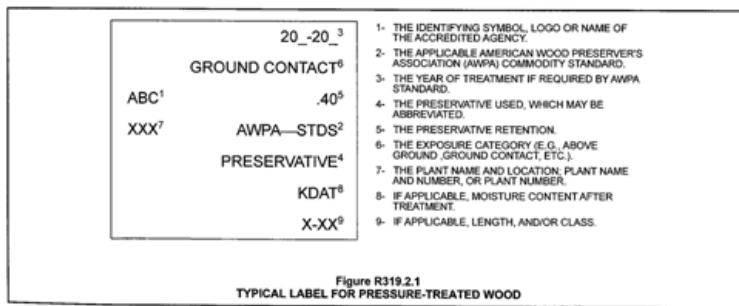
55. **Ground Contact.** R319.1.2 All wood in contact with the ground, embedded in concrete in direct contact with the ground or embedded in concrete exposed to the weather that supports permanent structures (*buildings, balconies, decks, porches*) intended for human occupancy shall be approved pressure-preservative-treated wood suitable for ground contact use...



56. **Members exposed to the weather.** R319.1.3. In geographical areas...approved naturally durable or pressure-preservative-treated wood shall be used for those portions of wood members that form the structural supports of buildings, balconies, decks, porches, or similar

permanent building appurtenances when those members are exposed to the weather without adequate protection from a roof, eave, overhang or other covering... Depending on local experience, such members may include: 1. Horizontal members such as girders, joists and decking. 2. Vertical members such as posts, poles and columns. 3. Both horizontal and vertical members.

57. **Quality Mark.** R319.2 Lumber and plywood required to be pressure-preservative-treated in accordance with Section R319.1 shall bear the quality mark of an approved inspection agency...that complies with the requirements of the American Lumber Standard Committee treated wood program.



58. **Fasteners.** R319.3 Fasteners for pressure-preservative-treated and fire-retardant treated wood shall be of hot-dipped zinc-coated, galvanized steel, stainless steel, silicon bronze or copper. The coating weights for zinc-coated fasteners shall be in accordance with ASTM A 153. **Exceptions:** 1. One-half inch diameter or larger steel bolts. 2. Fasteners other than nails and timber rivets shall be permitted to be of mechanically deposited zinc-coated steel

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with coating weights in accordance with ASTM B 695, Class 55, minimum.

59. **Protection against Subterranean Termites.** R320. In areas subject to damage from termites as indicated by Table R301.2(1) (including all counties in Kentucky), methods of protection shall be one of the following methods or a combination of these methods: 1. Chemical termiticide treatment... 2. Termite baiting system installed and maintained according to the label. Pressure preservative treated wood in accordance with the AWPA standards listed in Section R319.1. 4. Naturally termite resistant wood as provided in Section R320.3. 5. Physical barriers as provided in Section R320.4.

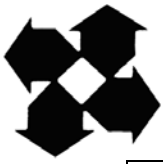
60. **Site Address.** R321.1. Approved numbers (3" high minimum) or addresses shall be provided for all new buildings in such a position as to be clearly visible and legible from the street or road fronting the property.

61. **Flood resistant construction.** R324. Buildings and structures constructed in whole or in part in flood hazard areas (including A or V zones) as established in Table R301.2(1), and as regulated in the Local Floodplain Management for Hardin County (Flood Insurance Rate Map 2007), shall be designed and constructed in accordance with the provisions contained in this section.

62. **Drainage.** R401.3. Surface drainage shall be diverted to a storm sewer conveyance or other approved point of collection so as not to create a hazard. Lots shall be graded to drain surface water away from foundation walls. The grade shall fall a minimum of 6 inches within the first 10 feet.

63. **Concrete. Minimum specified compressive strength of concrete.** Table R402.2. In Hardin County, Weathering probability shall be considered "Severe".

Type or Location of Concrete Construction	Minimum PSI Concrete Strength
Basement walls, foundations & other concrete not exposed to the weather	2,500; note c
Basement slabs and interior slabs on grade, except garage floor slabs	2,500; note c



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Basement walls, foundation walls, exterior walls and other vertical concrete work exposed to the weather	3,000; note d
Porches, carport slabs and steps exposed to the weather, and garage floor slabs	3,500; notes d,e,f

**Footnote c:** Concrete in these locations that may be subject to freezing and thawing during construction shall be air-entrained concrete in accordance with footnote d.

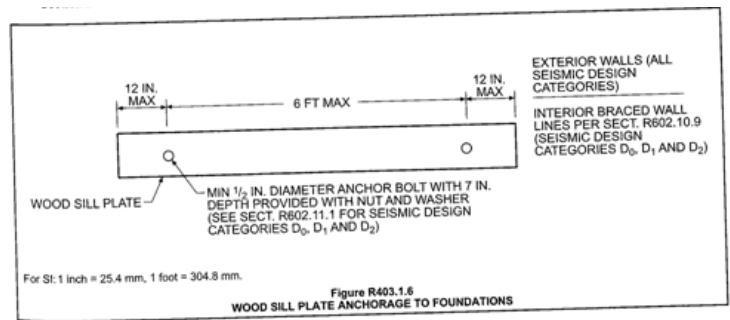
**Footnote d:** Concrete shall be air-entrained. Total air content (percent by volume of concrete) shall be not less than 5 percent or more than 7 percent.

**Footnote e:** See Section R402.2 for maximum cementitious materials content.

**Footnote f:** For garage floors with a steel troweled finish, reduction of the total air content (percent by volume of concrete) to not less than 3 percent is permitted if the specified compressive strength of the concrete is increased to not less than 4,000 psi.

64. **Slabs on ground with turned down footings.** R403.1.3.2 Slabs on ground with turned down footings shall have a minimum of one No. 4 bar at the top and the bottom of the footing. Exception: For slabs on ground cast monolithically with a footing, one No. 5 bar or two No. 4 bars shall be located in the middle third of the footing depth.

65. **Foundation Anchorage required.** R403.1.6. **When** braced wall panels are supported directly on continuous foundations ... The wood sole plate at exterior walls on monolithic slabs and wood sill plate shall be anchored to the foundation with **anchor bolts spaced a maximum of 6 feet on center**. There shall be a minimum of **two bolts per plate section with one bolt located not more than 12 inches or less than seven bolt diameters (typically 4") from each end of the plate section**. Bolts shall be at least 1/2" in diameter and shall extend a minimum of 7 inches into masonry or concrete. A nut and washer shall be tightened on each bolt of the plate.



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66. **Foundation and Retaining Walls.** R404.1 (Kentucky Amendments). Concrete and masonry foundation walls shall be selected and constructed in accordance with the provisions of Section R404 or in accordance with ACI 318, ACI 332, NCMA TR68-A or other approved standards. When ACI 318, ACI 332 or ACI 530/ASCE 5/TMS 402 or the provisions of Section R404 are used to design concrete or masonry foundation walls, project drawings, typical details and specifications are not required for design, unless otherwise required by the state law of the jurisdiction having authority. (Note Tables R404.1(1), R404.1(2) and R404.1(3) are deleted.) Refer to Table R404.1.1 (5) Concrete Foundation Walls. Footnotes: h, l, j, k, Page 19, and page 20 of Kentucky Amendments 2007 Kentucky Residential Code.

67. **Basement Floor.** R404.1. Full basement floor shall be **3.5 inches thick concrete** slab poured tight against the bottom of the foundation wall.

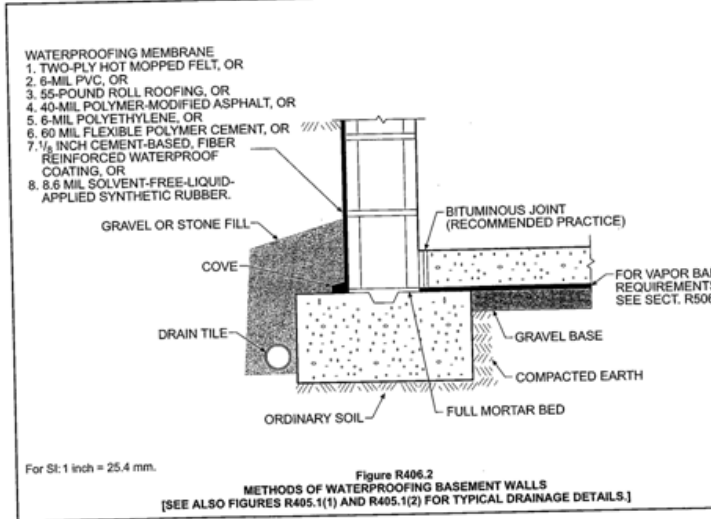
68. **Height above Finished grade.** R404.1.6 Concrete and masonry foundation walls shall extend above the finished grade... a minimum of 4 inches where masonry veneer is used and a minimum of 6 inches elsewhere.

69. **Wood Foundation Walls.** R404.2. Wood foundation walls shall be installed and completed in accordance with R404.2 through R404.3.

70. **Insulating Concrete Form Foundation Walls.** R404.4. Insulating concrete form foundation walls shall be built in compliance with R404.4 through R404.4.11. Foam plastic insulation must be installed in accordance with R314.



**71. Concrete and Masonry Foundation Dampproofing.** R406.1. Except where required by Section R406.2 to be waterproofed, foundation walls that retain earth and enclose interior spaces and floors below grade shall be dampproofed from the top of the footing to the finished grade. Masonry walls shall have not less than 3/8 inch Portland cement parging applied to the exterior of the wall. The parging shall be dampproofed in accordance with one of the following: 1. Bituminous coating. 2. 3 pounds per square yard of acrylic modified cement. 3. 1/8 inch coat of surface-bonding cement complying with ASTM C 887. 4. Any material permitted for waterproofing in Section 406.2.



**72. Concrete and Masonry Foundation Waterproofing.** R406.2. In areas where a high water table or other severe soil-water conditions are known to exist, exterior foundation walls that retain earth and enclose interior spaces and floors below grade shall be waterproofed from the top of the footing to the finished grade. Walls shall be waterproofed in accordance with one of the following: 1. 2-ply hot-mopped felts. 2. 55-pound roll roofing. 3. 6-mil polyvinyl chloride. 4. 6-mil polyethylene. 5. 40-mil polymer-modified asphalt. 6. 60-mil flexible polymer cement. 7. 1/8-inch cement-based, fiber-reinforced, waterproof coating. 8. 60-mil solvent-free liquid-applied synthetic rubber.

**Exception:** Organic-solvent based products such as hydrocarbons, chlorinated hydrocarbons, ketones and

esters shall not be used for ICF walls with expanded polystyrene form material.

**73. Columns. Structural requirements.** R407.3. The columns shall be restrained to prevent lateral displacement at the bottom end. **Wood columns shall not be less in nominal size than 4" by 4" and steel columns shall not be less than 3" diameter standard pipe or approved equivalent.** Exception: In seismic design categories A, B and C columns no more than 48 inches in height on a pier or footing are exempt from the bottom end lateral displacement requirement within underfloor areas enclosed by a continuous foundation. *To minimize the chance of accidentally displacing columns supporting beams or girders, a means of mechanically anchoring a column is required.*

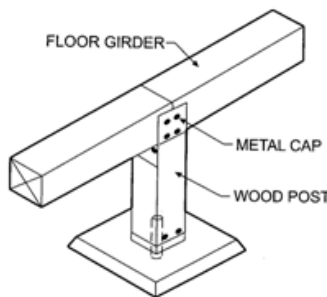


Figure R407.3(2)  
 COLUMN ANCHORAGE

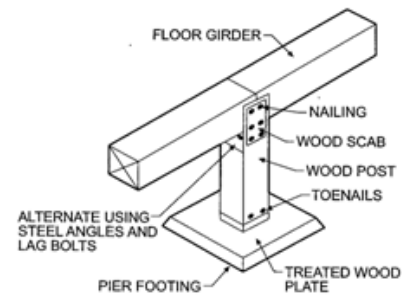


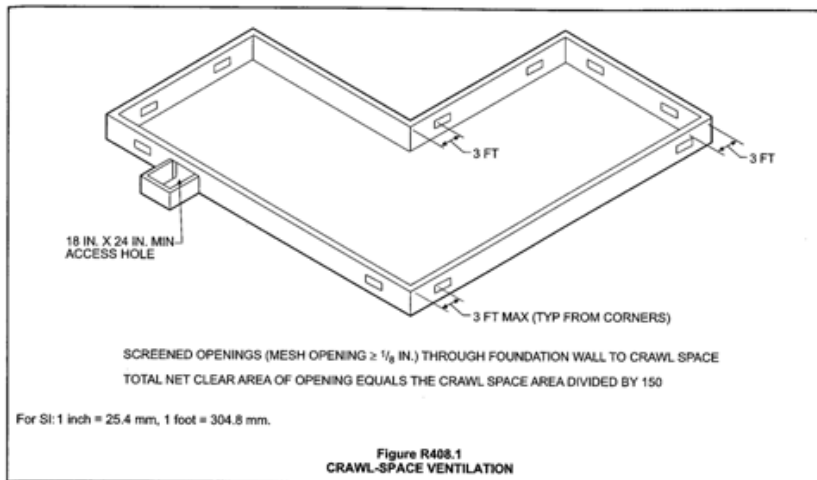
Figure R407.3(1)  
 COLUMN ANCHORAGE

**74. Under-Floor Space. Ventilation.** R408. The under-floor space between the bottom of the floor joists and the earth under any building (except space occupied by a basement) shall have ventilation openings through foundation walls or exterior walls. Minimum size: 1 SF of ventilation per each 150 SF of under-floor space. One such ventilation opening shall be within 3 feet of each corner of the building. *Under-floor spaces are commonly referred to as a crawl space.*



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75. **Openings for under-floor ventilation.** R408.2. Ventilation openings shall be covered for their height and width with any of the following materials provided that the least dimension of the covering shall not exceed  $\frac{1}{4}$  inch: 1. Perforated sheet metal plates, .070 inch thick. 2. Expanded sheet metal plates, .047 inch thick. 3. cast-iron grill or grating. 4. Extruded load-bearing brick vents. 5. Hardware cloth, .035 inch thick wire or heavier. 6. Corrosion-resistant wire mesh, with the least dimension being  $\frac{1}{8}$  inch.
76. Ventilation openings are not required where continuously operated mechanical ventilation is provided at a rate of 1.0 cfm for each 50 square feet of under floor space floor area and ground is covered with an approved vapor retarder material. (R408.2).
77. **Unvented Crawl Spaces.** (R408.3) Ventilation openings are not required when:
- the ground surface is covered with a 6-mil continuous vapor retarder with all joints overlapped by 6 inches and be sealed or taped. AND
  - The edges of the vapor retarder shall extend at least 6 inches up the stem wall and shall be attached to the stem wall, AND
  - the space is supplied with conditioned air installed per R408.3.2.2.1 or R408.3.2.2.2, including an air pathway to the common area (such as a duct or transfer grille, AND
  - the perimeter walls are insulated in accordance with N1102.2.2.8. (R-10 Continuous insulation)
  - Plenum complying with Section M1601.4, if under-floor space is used as a plenum.
78. **Crawl space wall.** [N1102.2.8]. As an alternative to insulating floors over crawlspaces, insulation of crawl space walls when the crawl space is not vented to the outside is permitted. Insulation shall be permanently fastened to the wall & extend downward from the floor to the finished grade level and then vertically and/or horizontally for at least an additional 24 inches. Minimum insulation required is **R-10 for continuous insulation or R-13 for cavity wall insulation.** Exposed earth in unvented crawl space foundations shall be covered with a 6-mil continuous vapor retarder with all joints overlapped by 6 inches and be sealed or taped. The edges of the vapor retarder shall extend at least 6 inches up the stem wall and shall be attached to the stem wall. **To comply with this provision, the crawlspace must be mechanically vented or supplied with conditioned air from the living space.** (R408.3).
79. **Access Opening.** (R408.4) An access opening 18 inches by 24 inches shall be provided to the under-floor space. See Section M306.4 for access requirements where mechanical equipment is located under floors. Under floor spaces containing appliances requiring access shall be provided with an access opening and unobstructed passageway large enough to remove the largest appliance.
80. **Removal of debris.** (R408.5) The under floor grade shall be cleaned of all vegetation and organic material. All wood forms used for placing concrete shall be removed before a building is occupied for any purpose. All construction materials shall be removed before a building is occupied or used for any purpose.
81. **Finished grade.** (R408.6) The finished grade of under floor surface may be located at the bottom of the footings; however, where there is evidence that the groundwater table can rise to within 6 inches of the finished floor at the building perimeter or where there is evidence that the surface water does not readily drain from the building site, the grade in the under floor space shall be as high as the outside finished grade, unless an approved drainage system is provided.

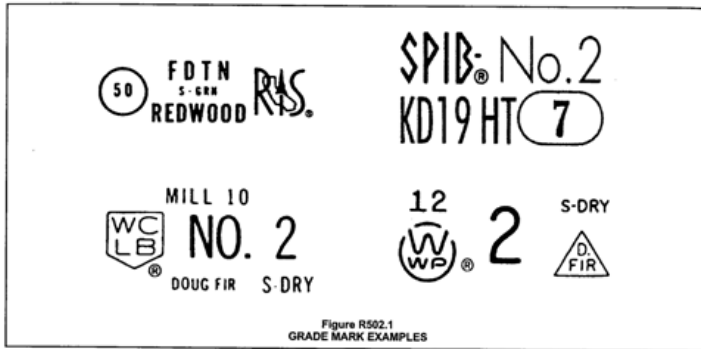


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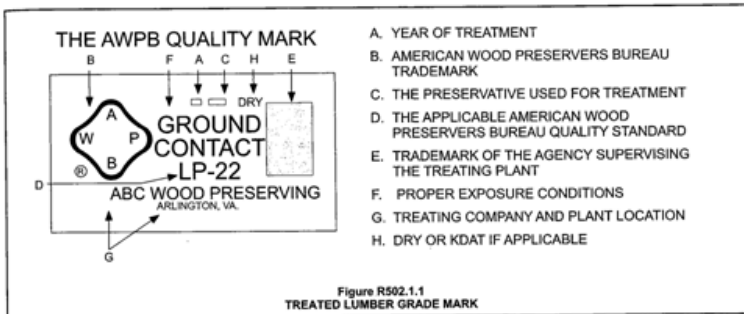
## Planning and Development Commission

- 82. Flood Resistance. (R408.7).** For buildings located in areas prone to flooding as established in Table R301.2(1); or as indicated by the Local Floodplain Management Program for Hardin County, Flood Insurance Rate Map 2007; the following shall apply: 1. Walls enclosing the under-floor space shall be provided with flood openings in accordance with Section R324.2.2. 2. The finished ground level of the under-floor space shall be equal to or higher than the outside finished ground level. Exception: Under-floor spaces that meet the requirements of FEMA/FIA TB 11-1.
- 83. Wood Floor Framing. (R502.)** Load bearing dimension lumber for joists, beams and girders shall be identified by a grade mark of a lumber grading or inspection agency that has been approved by an accreditation body that complies with DOC PS

20. In lieu of a grade mark, a certificate of inspection issued by a lumber grading or inspection agency meeting the requirements of this section shall be accepted.



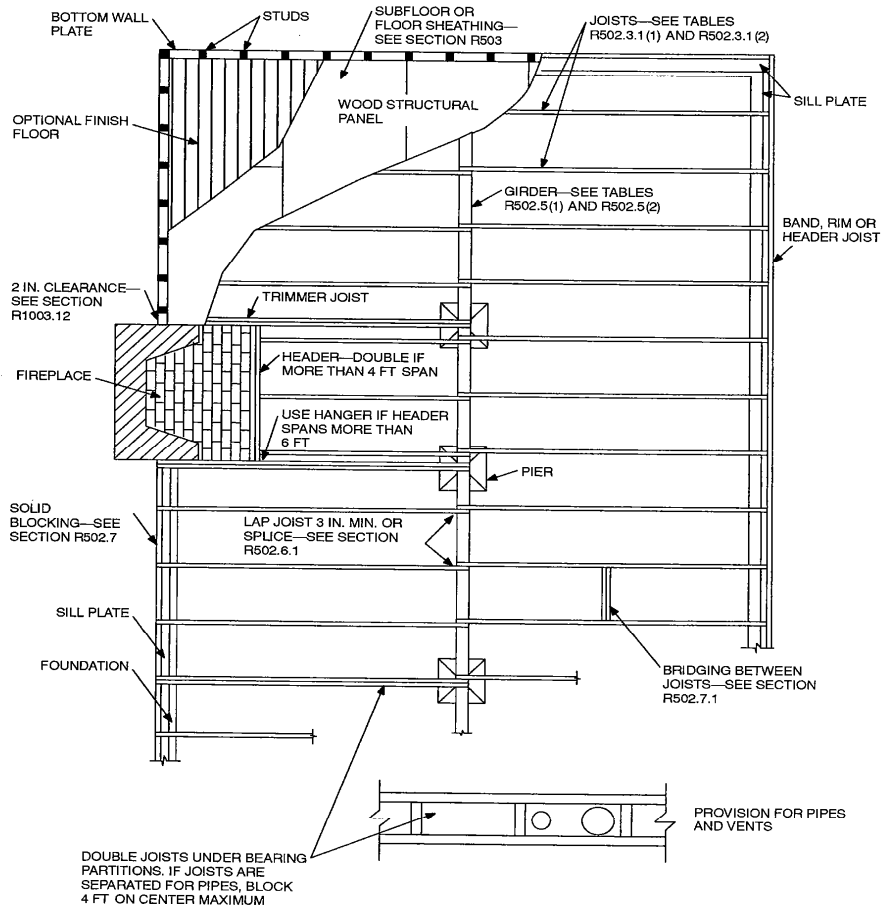
- 84. Preservative-treated dimension lumber shall also be identified as required by Section R319.1.**





**85. Floor Construction.**

**FLOORS**



For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm.

**FIGURE R502.2  
 FLOOR CONSTRUCTION**

❖ This figure is a schematic plan of typical wood floor framing. It serves as a key, providing references to the applicable provisions of the code.



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86. Allowable Joist Spans. R502.3 Spans for floor joists shall be in accordance with Tables R502.3.1(1) and R502.3.1(2)

FLOORS

**TABLE R502.3.1(1)**  
**FLOOR JOIST SPANS FOR COMMON LUMBER SPECIES**  
 (Residential sleeping areas, live load = 30 psf, L/Δ = 360)<sup>a</sup>

JOIST SPACING (inches)	SPECIES AND GRADE	DEAD LOAD = 10 psf				DEAD LOAD = 20 psf			
		2x6	2x8	2x10	2x12	2x6	2x8	2x10	2x12
		Maximum floor joist spans							
		(ft - in.)	(ft - in.)	(ft - in.)	(ft - in.)	(ft - in.)	(ft - in.)	(ft - in.)	(ft - in.)
12	Douglas fir-larch SS	12-6	16-6	21-0	25-7	12-6	16-6	21-0	25-7
	Douglas fir-larch #1	12-0	15-10	20-3	24-8	12-0	15-7	19-0	22-0
	Douglas fir-larch #2	11-10	15-7	19-10	23-0	11-6	14-7	17-9	20-7
	Douglas fir-larch #3	9-8	12-4	15-0	17-5	8-8	11-0	13-5	15-7
	Hem-fir SS	11-10	15-7	19-10	24-2	11-10	15-7	19-10	24-2
	Hem-fir #1	11-7	15-3	19-5	23-7	11-7	15-2	18-6	21-6
	Hem-fir #2	11-0	14-6	18-6	22-6	11-0	14-4	17-6	20-4
	Hem-fir #3	9-8	12-4	15-0	17-5	8-8	11-0	13-5	15-7
	Southern pine SS	12-3	16-2	20-8	25-1	12-3	16-2	20-8	25-1
	Southern pine #1	12-0	15-10	20-3	24-8	12-0	15-10	20-3	24-8
	Southern pine #2	11-10	15-7	19-10	24-2	11-10	15-7	18-7	21-9
	Southern pine #3	10-5	13-3	15-8	18-8	9-4	11-11	14-0	16-8
	Spruce-pine-fir SS	11-7	15-3	19-5	23-7	11-7	15-3	19-5	23-7
	Spruce-pine-fir #1	11-3	14-11	19-0	23-0	11-3	14-7	17-9	20-7
	Spruce-pine-fir #2	11-3	14-11	19-0	23-0	11-3	14-7	17-9	20-7
	Spruce-pine-fir #3	9-8	12-4	15-0	17-5	8-8	11-0	13-5	15-7
16	Douglas fir-larch SS	11-4	15-0	19-1	23-3	11-4	15-0	19-1	23-0
	Douglas fir-larch #1	10-11	14-5	18-5	21-4	10-8	13-6	16-5	19-1
	Douglas fir-larch #2	10-9	14-1	17-2	19-11	9-11	12-7	15-5	17-10
	Douglas fir-larch #3	8-5	10-8	13-0	15-1	7-6	9-6	11-8	13-6
	Hem-fir SS	10-9	14-2	18-0	21-11	10-9	14-2	18-0	21-11
	Hem-fir #1	10-6	13-10	17-8	20-9	10-4	13-1	16-0	18-7
	Hem-fir #2	10-0	13-2	16-10	19-8	9-10	12-5	15-2	17-7
	Hem-fir #3	8-5	10-8	13-0	15-1	7-6	9-6	11-8	13-6
	Southern pine SS	11-2	14-8	18-9	22-10	11-2	14-8	18-9	22-10
	Southern pine #1	10-11	14-5	18-5	22-5	10-11	14-5	17-11	21-4
	Southern pine #2	10-9	14-2	18-0	21-1	10-5	13-6	16-1	18-10
	Southern pine #3	9-0	11-6	13-7	16-2	8-1	10-3	12-2	14-6
	Spruce-pine-fir SS	10-6	13-10	17-8	21-6	10-6	13-10	17-8	21-4
	Spruce-pine-fir #1	10-3	13-6	17-2	19-11	9-11	12-7	15-5	17-10
	Spruce-pine-fir #2	10-3	13-6	17-2	19-11	9-11	12-7	15-5	17-10
	Spruce-pine-fir #3	8-5	10-8	13-0	15-1	7-6	9-6	11-8	13-6
19.2	Douglas fir-larch SS	10-8	14-1	18-0	21-10	10-8	14-1	18-0	21-0
	Douglas fir-larch #1	10-4	13-7	16-9	19-6	9-8	12-4	15-0	17-5
	Douglas fir-larch #2	10-1	12-10	15-8	18-3	9-1	11-6	14-1	16-3
	Douglas fir-larch #3	7-8	9-9	11-10	13-9	6-10	8-8	10-7	12-4
	Hem-fir SS	10-1	13-4	17-0	20-8	10-1	13-4	17-0	20-7
	Hem-fir #1	9-10	13-0	16-4	19-0	9-6	12-0	14-8	17-0
	Hem-fir #2	9-5	12-5	15-6	17-1	8-11	11-4	13-10	16-1
	Hem-fir #3	7-8	9-9	11-10	13-9	6-10	8-8	10-7	12-4
	Southern pine SS	10-6	13-10	17-8	21-6	10-6	13-10	17-8	21-6
	Southern pine #1	10-4	13-7	17-4	21-1	10-4	13-7	16-4	19-6
	Southern pine #2	10-1	13-4	16-5	19-3	9-6	12-4	14-8	17-2
	Southern pine #3	8-3	10-6	12-5	14-9	7-4	9-5	11-1	13-2
	Spruce-pine-fir SS	9-10	13-0	16-7	20-2	9-10	13-0	16-7	19-6
	Spruce-pine-fir #1	9-8	12-9	15-8	18-3	9-1	11-6	14-1	16-3
	Spruce-pine-fir #2	9-8	12-9	15-8	18-3	9-1	11-6	14-1	16-3
	Spruce-pine-fir #3	7-8	9-9	11-10	13-9	6-10	8-8	10-7	12-4
24	Douglas fir-larch SS	9-11	13-1	16-8	20-3	9-11	13-1	16-2	18-9
	Douglas fir-larch #1	9-7	12-4	15-0	17-5	8-8	11-0	13-5	15-7
	Douglas fir-larch #2	9-1	11-6	14-1	16-3	8-1	10-3	12-7	14-7
	Douglas fir-larch #3	6-10	8-8	10-7	12-4	6-2	7-9	9-6	11-0
	Hem-fir SS	9-4	12-4	15-9	19-2	9-4	12-4	15-9	18-5
	Hem-fir #1	9-2	12-0	14-8	17-0	8-6	10-9	13-1	15-2
	Hem-fir #2	8-9	11-4	13-10	16-1	8-0	10-2	12-5	14-4
	Hem-fir #3	6-10	8-8	10-7	12-4	6-2	7-9	9-6	11-0
	Southern pine SS	9-9	12-10	16-5	19-11	9-9	12-10	16-5	19-11
	Southern pine #1	9-7	12-7	16-1	19-6	9-7	12-4	14-7	17-5
	Southern pine #2	9-4	12-4	14-8	17-2	8-6	11-0	13-1	15-5
	Southern pine #3	7-4	9-5	11-1	13-2	6-7	8-5	9-11	11-10
	Spruce-pine-fir SS	9-2	12-1	15-5	18-9	9-2	12-1	15-0	17-5
	Spruce-pine-fir #1	8-11	11-6	14-1	16-3	8-1	10-3	12-7	14-7
	Spruce-pine-fir #2	8-11	11-6	14-1	16-3	8-1	10-3	12-7	14-7
	Spruce-pine-fir #3	6-10	8-8	10-7	12-4	6-2	7-9	9-6	11-0

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 pound per square foot = 0.0479 kPa.

NOTE: Check sources for availability of lumber in lengths greater than 20 feet.

a. Dead load limits for townhouses in Seismic Design Category C and all structures in Seismic Design Categories D<sub>0</sub>, D<sub>1</sub> and D<sub>2</sub> shall be determined in accordance with Section R301.2.2.2.1.

❖ This table provides allowable joist spans for common lumber species, grades and joist sizes. The spans are applicable to residential sleeping areas. Use of this table is similar to the use described in the example in Section R502.3.



# Hardin County

## Planning and Development Commission

### FLOORS

**TABLE R502.3.1(2)**  
**FLOOR JOIST SPANS FOR COMMON LUMBER SPECIES**  
 (Residential living areas, live load = 40 psf, L/Δ = 360)<sup>b</sup>

JOIST SPACING (inches)	SPECIES AND GRADE		DEAD LOAD = 10 psf				DEAD LOAD = 20 psf						
			2x6	2x8	2x10	2x12	2x6	2x8	2x10	2x12			
			Maximum floor joist spans										
			(ft - in.)	(ft - in.)	(ft - in.)	(ft - in.)	(ft - in.)	(ft - in.)	(ft - in.)	(ft - in.)	(ft - in.)		
12	Douglas fir-larch	SS	11-4	15-0	19-1	23-3	11-4	15-0	19-1	23-3			
	Douglas fir-larch	#1	10-11	14-5	18-5	22-0	10-11	14-2	17-4	20-1			
	Douglas fir-larch	#2	10-9	14-2	17-9	20-7	10-6	13-3	16-3	18-10			
	Douglas fir-larch	#3	8-8	11-0	13-5	15-7	7-11	10-0	12-3	14-3			
	Hem-fir	SS	10-9	14-2	18-0	21-11	10-9	14-2	18-0	21-11			
	Hem-fir	#1	10-6	13-10	17-8	21-6	10-6	13-10	16-11	19-7			
	Hem-fir	#2	10-0	13-2	16-10	20-4	10-0	13-1	16-0	18-6			
	Hem-fir	#3	8-8	11-0	13-5	15-7	7-11	10-0	12-3	14-3			
	Southern pine	SS	11-2	14-8	18-9	22-10	11-2	14-8	18-9	22-10			
	Southern pine	#1	10-11	14-5	18-5	22-5	10-11	14-5	18-5	22-5			
	Southern pine	#2	10-9	14-2	18-0	21-9	10-9	14-2	16-11	19-10			
	Southern pine	#3	9-4	11-11	14-0	16-8	8-6	10-10	12-10	15-3			
	Spruce-pine-fir	SS	10-6	13-10	17-8	21-6	10-6	13-10	17-8	21-6			
	Spruce-pine-fir	#1	10-3	13-6	17-3	20-7	10-3	13-3	16-3	18-10			
	Spruce-pine-fir	#2	10-3	13-6	17-3	20-7	10-3	13-3	16-3	18-10			
	Spruce-pine-fir	#3	8-8	11-0	13-5	15-7	7-11	10-0	12-3	14-3			
	16	Douglas fir-larch	SS	10-4	13-7	17-4	21-1	10-4	13-7	17-4	21-0		
		Douglas fir-larch	#1	9-11	13-1	16-5	19-1	9-8	12-4	15-0	17-5		
Douglas fir-larch		#2	9-9	12-7	15-5	17-10	9-1	11-6	14-1	16-3			
Douglas fir-larch		#3	7-6	9-6	11-8	13-6	6-10	8-8	10-7	12-4			
Hem-fir		SS	9-9	12-10	16-5	19-11	9-9	12-10	16-5	19-11			
Hem-fir		#1	9-6	12-7	16-0	18-7	9-6	12-0	14-8	17-0			
Hem-fir		#2	9-1	12-0	15-2	17-7	8-11	11-4	13-10	16-1			
Hem-fir		#3	7-6	9-6	11-8	13-6	6-10	8-8	10-7	12-4			
Southern pine		SS	10-2	13-4	17-0	20-9	10-2	13-4	17-0	20-9			
Southern pine		#1	9-11	13-1	16-9	20-4	9-11	13-1	16-4	19-6			
Southern pine		#2	9-9	12-10	16-1	18-10	9-6	12-4	14-8	17-2			
Southern pine		#3	8-1	10-3	12-2	14-6	7-4	9-5	11-1	13-2			
Spruce-pine-fir		SS	9-6	12-7	16-0	19-6	9-6	12-7	16-0	19-6			
Spruce-pine-fir		#1	9-4	12-3	15-5	17-10	9-1	11-6	14-1	16-3			
Spruce-pine-fir		#2	9-4	12-3	15-5	17-10	9-1	11-6	14-1	16-3			
Spruce-pine-fir		#3	7-6	9-6	11-8	13-6	6-10	8-8	10-7	12-4			
19.2		Douglas fir-larch	SS	9-8	12-10	16-4	19-10	9-8	12-10	16-4	19-2		
		Douglas fir-larch	#1	9-4	12-4	15-0	17-5	8-10	11-3	13-8	15-11		
	Douglas fir-larch	#2	9-1	11-6	14-1	16-3	8-3	10-6	12-10	14-10			
	Douglas fir-larch	#3	6-10	8-8	10-7	12-4	6-3	7-11	9-8	11-3			
	Hem-fir	SS	9-2	12-1	15-5	18-9	9-2	12-1	15-5	18-9			
	Hem-fir	#1	9-0	11-10	14-8	17-0	8-8	10-11	13-4	15-6			
	Hem-fir	#2	8-7	11-3	13-10	16-1	8-2	10-4	12-8	14-8			
	Hem-fir	#3	6-10	8-8	10-7	12-4	6-3	7-11	9-8	11-3			
	Southern pine	SS	9-6	12-7	16-0	19-6	9-6	12-7	16-0	19-6			
	Southern pine	#1	9-4	12-4	15-9	19-2	9-4	12-4	14-11	17-9			
	Southern pine	#2	9-2	12-1	14-8	17-2	8-8	11-3	13-5	15-8			
	Southern pine	#3	7-4	9-5	11-1	13-2	6-9	8-7	10-1	12-1			
	Spruce-pine-fir	SS	9-0	11-10	15-1	18-4	9-0	11-10	15-1	17-9			
	Spruce-pine-fir	#1	8-9	11-6	14-1	16-3	8-3	10-6	12-10	14-10			
	Spruce-pine-fir	#2	8-9	11-6	14-1	16-3	8-3	10-6	12-10	14-10			
	Spruce-pine-fir	#3	6-10	8-8	10-7	12-4	6-3	7-11	9-8	11-3			
	24	Douglas fir-larch	SS	9-0	11-11	15-2	18-5	9-0	11-11	14-9	17-1		
		Douglas fir-larch	#1	8-8	11-0	13-5	15-7	7-11	10-0	12-3	14-3		
Douglas fir-larch		#2	8-1	10-3	12-7	14-7	7-5	9-5	11-6	13-4			
Douglas fir-larch		#3	6-2	7-9	9-6	11-0	5-7	7-1	8-8	10-1			
Hem-fir		SS	8-6	11-3	14-4	17-5	8-6	11-3	14-4	16-10 <sup>a</sup>			
Hem-fir		#1	8-4	10-9	13-1	15-2	7-9	9-9	11-11	13-10			
Hem-fir		#2	7-11	10-2	12-5	14-4	7-4	9-3	11-4	13-1			
Hem-fir		#3	6-2	7-9	9-6	11-0	5-7	7-1	8-8	10-1			
Southern pine		SS	8-10	11-8	14-11	18-1	8-10	11-8	14-11	18-1			
Southern pine		#1	8-8	11-5	14-7	17-5	8-8	11-3	13-4	15-11			
Southern pine		#2	8-6	11-0	13-1	15-5	7-9	10-0	12-0	14-0			
Southern pine		#3	6-7	8-5	9-11	11-10	6-0	7-8	9-1	10-9			
Spruce-pine-fir		SS	8-4	11-0	14-0	17-0	8-4	11-0	13-8	15-11			
Spruce-pine-fir		#1	8-1	10-3	12-7	14-7	7-5	9-5	11-6	13-4			
Spruce-pine-fir		#2	8-1	10-3	12-7	14-7	7-5	9-5	11-6	13-4			
Spruce-pine-fir		#3	6-2	7-9	9-6	11-0	5-7	7-1	8-8	10-1			

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 pound per square foot = 0.0479 kPa.

NOTE: Check sources for availability of lumber in lengths greater than 20 feet.

a. End bearing length shall be increased to 2 inches.

b. Dead load limits for townhouses in Seismic Design Category C and all structures in Seismic Design Categories D<sub>0</sub>, D<sub>1</sub>, and D<sub>2</sub> shall be determined in accordance with Section R301.2.2.2.1.

❖ See the commentary for Section R502.3.

2006 INTERNATIONAL RESIDENTIAL CODE® COMMENTARY

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87. **Floor cantilevers. R502.3.3.** Floor cantilever spans shall not exceed the nominal depth of the wood floor joist. Floor cantilevers constructed in accordance with Table R502.2.3 shall be permitted when supporting a light-frame bearing wall and roof only. **The ratio of backspan to cantilever span shall be at least 3:1. [E.g. 2' overhang requires 6' backspan.]**
88. **End Bearing Requirements. R502.6.** The ends of each joist, beam or girder shall have not less than 1.5 inches of bearing on wood or metal and not less than 3 inches bearing on masonry or concrete except where supported on ledger strips not less than a nominal 2 inches by 2 inches, or by the use of approved joist hangers. Where floor joist beams are pocketed into foundation walls there shall be ½ inch clearance maintained at sides and end.
89. **Bearing Floor Systems. R502.6.1.** Joists framing from opposite sides over a bearing support shall lap a minimum of 3 inches and shall be nailed together with a minimum of three 10d face nails. A wood or metal splice with strength equal to or greater than that provided by the nailed lap is permitted.
90. **Bearing Joist Framing. R502.6.2.** Joist framing into the side of a wood girder shall be supported by approved framing anchors (joist hangers) or on ledger strips not less than a nominal 2 inches by 2 inches.
91. **Lateral Restraint at Supports. R502.7.** Joists shall be supported laterally at the ends by full depth solid blocking not less than 2 inches thick, or by attachment to a header, band, or rim joist, or to adjoining studs, or shall be otherwise provided with lateral support to prevent rotation.
92. **Hurricane Ties required. Table R602.3** In addition to the standard nailing requirements found in Table 602.3(1) hurricane ties will be required at all locations of the top sill plates when engineered roof trusses are used in wood framing construction as well as when standard roof rafters are used. R301.1 Design requiring a "complete load path".  
**Uplift Resistance. R802.11.1** Roof assemblies which are subject to wind uplift pressures of 20 pounds per square foot or greater shall have roof rafters or trusses attached to their supporting wall assemblies by connections capable of providing the resistance required in Table R802.11.
93. **Top plate lap required at corners & bearing wall intersections. R602.3.2.** Wood stud walls shall be capped with a double top plate installed to provide overlapping at corners and intersections with bearing partitions. End joints in top plates shall be offset at least 24 inches.
94. **Nail Guards (stops) Required. R602.6.** Nail stops consisting of metal shields are required to be installed where piping for plumbing supply and drain lines or electrical wiring, phone wiring, gas lines, etc. are drilled through stud framed walls and the hole is within 5/8 inch of drywall edge of stud or plate. Attach with 8d commons.
95. **Drilling and Notching – Studs. R602.6** Drilling and notching of studs shall be in accordance with the following:  
1. Notching. Any stud in an exterior wall or bearing partition may be cut or notched to a depth not exceeding 25% of its width. Studs in non-bearing partitions may be notched to a depth not exceeding 40% of a single stud width.  
2. Drilling. Any stud may be bored or drilled, provided that the diameter of the resulting hole is no more than 60% of the stud width, the edge of the hole is no more than 5/8 inch to the edge of the stud, and the hole is not located in the same section as a cut or notch. Studs located in exterior walls or bearing partitions drilled over 40% and up to 60% shall also be doubled with no more than 2 successive doubled studs bored. **Exception: Use of approved stud shoes is permitted when they are installed in accordance with the manufacturer's recommendations.**
96. **Drilling and Notching of Top Plate. R602.6.1.** When piping or ductwork is placed in or partly in an exterior wall or interior load-bearing wall, necessitating cutting, drilling or notching of the top plate by more than 50% of its width, a galvanized metal tie not less than 0.054 thick (16 ga.) and 1 ½ inches wide shall be fastened across and to the plate at each side of the opening with not less than eight 16d nails at each side or equivalent.
97. **Headers. Tables R502.5(1) and R502.5(2).** These tables are used to determine allowable spans for headers as well as girders. These tables are applicable to openings in bearing walls, but not applicable to nonbearing walls.
98. **Fireblocking required. R602.8.** Fireblocking shall be installed to cut off all concealed draft openings (both vertical and horizontal) and to form an effective fire barrier between stories, and between a top story and the roof space. **Fireblocking shall be provided in wood frame construction in the following locations:**  
1. In concealed spaces of stud walls and partitions, including furred spaces and parallel rows of studs or staggered studs as follows: 1.1 vertically at the ceiling and floor levels. 1.2 horizontally at intervals not exceeding 10 feet.  
2. At all interconnections between concealed vertical and horizontal spaces such as occur at soffits, drop ceilings and cove ceilings.  
3. In concealed spaces between stair stringers at the top and bottom of the run. Enclosed spaces under stairs shall comply with Section R311.2.2.  
4. At openings around vents, pipes, ducts, cables and wires at ceiling and floor level, with an approved material to resist the free passage of flame and products of combustion.  
5. For the fireblocking of chimneys and fireplaces, see Section R1003.19.  
6. Fireblocking of cornices of a two-family dwelling is required at the line of dwelling unit separation.



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Planning and Development Commission

99. **Domestic Clothes Dryer Ducts.** **IMC 1502.2 and IMC 504.6** Exhaust ducts for domestic clothes dryers shall be constructed of metal and shall have a smooth interior finish. The exhaust duct shall be a minimum nominal size of 4 inches in diameter. The entire exhaust system shall be supported and secured in place. The clothes dryer transition ducts used to connect from the appliance to the exhaust duct system shall be limited to single lengths of 8 feet and shall be listed and labeled for the application. The maximum length of a clothes dryer exhaust duct shall not exceed 25' from the start of the exhaust system to the exterior outlet terminal. The maximum length of the duct shall be reduced 2.5 feet for each 45 degree bend, and 5 feet for each 90 degree bend. The clothes dryer exhaust system is required to be roughed-in in accordance with Sections 504.6 and 504.6.1.; and it shall terminate on the outside of a building and be equipped with a backdraft damper. *Please request our Clothes Dryer handout for more detailed information.*
100. **Bathroom exhaust fans required.** **IMC 501.3.** Bathrooms without openable windows are required to have mechanical ventilation (exhaust fans). The venting must be taken through the roof, or through a wall or soffit and be terminated on the exterior with a protective grilled diffuser, visible from the exterior. Toilet rooms and bathrooms must have a mechanical exhaust capacity of 50 cfm intermittent or 20 cfm continuous. Table IMC 403.3



# Hardin County

## Planning and Development Commission

### Bibliography

**The code references and graphics pictured throughout this handout are found in the following resources.**

1. R310. Emergency Escape and Rescue Window; graphic drawing; Figure R310.1; 2006 International Residential Code Commentary; this handout page 2.
2. Figure b12, Bedroom Window Egress; firefighter graphic drawing; Code Check 2000, A Field Guide to Building a Safe House, this handout page 2.
3. R310.2 Window Wells; graphic drawing; Figure R310.2, 2006 International Residential Code Commentary, this handout page 3.
4. R311.5.1 Stairways Width, Stairway Clearances, graphic drawing, 2006 International Residential Code Commentary, this handout page 3.
5. R311.5.2 Minimum Headroom, graphic drawing, 2006 International Residential Code Commentary, this handout page 4.
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- 2008.002 BCCH, ENERGY EFFICIENCY REQUIREMENTS
- 2008.003 BCCH, ACCESSORY STRUCTURES
- 2008.004 BCCH, DRYER VENT REQUIREMENTS
- 2008.005 BCCH, FOOTING INSPECTION CHECKLIST
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