

Cumberland County Building Codes and Inspection

1760 South Main Street, Crossville, TN 38555

Monday – Friday, 8 am - 4:30 pm



Building Codes Expectations for Inspections 2018 IRC Building Codes

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GENERAL INFORMATION FOR BUILDERS

The following information must be provided in order to apply for a building permit:

1. 911 Address (931-484-0179 to obtain one)
2. Copy of septic permit and septic layout (Contact TDEC at 931-698-4515 or use TDEC's online septic search at <https://tdec.tn.gov/filenetsearch>)
3. Proof of contractor's license
4. Proof of comp insurance or an affidavit of exemption
5. County business license

As a building permit holder, you are the contractor, which also makes you the coordinator of the building project. As a permit holder, it is your responsibility to coordinate the job and required inspections for that job site. The permit holder is responsible for calling in each inspection, in the proper order.

Inspections can be requested online through Cumberland County Codes' online portal: COMING SOON

NO inspections will be scheduled without a permit.

Before any inspections can be scheduled, the following must be in place:

1. 911 address must be visible from the road front, and building permit posted on-site
2. Access to a portable restroom for workers
3. A crushed stone path to the site to prevent mud from being tracked off-site
4. Straw bales, silt fences, or other erosion control devices to keep soil and other debris from leaving the site (EPSC measures are enforced)
5. Built-in basement and 2-story homes must have blueprints drawn by a registered design professional, with a legend for the windows and doors, for review of egress
6. Walls above 10 feet tall require a letter from an engineer
7. Footers & Slabs on backfill must have engineered letter

The following inspections are required for ALL structures:

1. **FOOTING (before concrete is ordered or poured)**
 - Building Placard Posted on site

- Address at the Road
- Width of footer
- Depth of footer (Grade Stakes Required 6 ft spacing)
- Soil type
- Bulkheads, Steps & Cut-Backs
- Piers & Beams
- Slope (no more than 1:10)

2. SLABS (before concrete is ordered or poured)

- Depth
- Vapor Barrier
- Plumbing Visual
- Plumbing Testing
- Slope
- Anchor Bolts in Slab

3. FOUNDATION (can be performed during Rough-In)

- . Foundation Vents
- . Sill Plate connections
- . Anchor Bolts
- . Crawl Space Access
- . Waterproofing

4. ROUGH-IN, TO INCLUDE: (Electrical rough-in must be completed before)

FRAMING

- Girders
- Headers
- Glazing
- Ledger/J-hanger
- Jack studs
- Joists
- Stud spacing
- Stud height
- Top plate
- Stairs
- Rafters/trusses
- Corner bracing
- Exit door
- Windows for Egress
- Safety Glazing in Hazardous Areas

PLUMBING

- (permit required)
- Vents
 - Elbows
 - Wyes
 - Testing
 - Structural
 - Slope
 - Strapping
 - Nail guards
 - Gas lines

MECHANICAL

- (permit required)
- Clothes dryer
 - Returns
 - Ductwork
 - Floor registers
 - Mechanical vent
 - Nail guards
 - Bathroom Vents
 - Range Venting

5. ENERGY (insulation valves)

- U-factor
- Wall / R
- Crawl Space / R
- Ceiling / R
- Basement walls /R
- Air Seal performed during Energy Evaluation:
Caulking/foaming of all exterior walls,
top plate, sill plate, windows & doors
- Foam behind utility boxes on exterior walls
- All floor and ceiling penetrations sealed
- Insulation & Moisture Barrier behind showers
Installed on exterior walls

6. FINAL

- Decks
- Riser Heights & Depths
- Guard rails
- Hand rails
- Water heater
- Plumbing
- Fire rating
- Graded slope
- Access door
- Address
- HVAC size
- Unit drainage
- Supply ducts
- Return ducts
- Rodent proofing
- Attic / R

CERTIFICATE OF OCCUPANCY (before structure can be occupied)

ADDRESS REQUIREMENTS

TEMPORARY POSTING FOR ELECTRICAL PERMITS – Every person applying for a temporary and permanent electrical service of a new residence or business must first contact the E-911 office for issuance of a new address (931-484-0179). The new number

must be posted before utility service or telephone lines are installed. The number must be visible from the road-front of the new location, and must meet the following requirements:

- Numbers must be at least six (6) inches in height and be red or orange in color.
- The numbers don't have to be purchased; they can be painted on a board that is at least 1 foot by 3 feet in size. The board may be attached to the temporary electrical service, as long as it is visible and within 50 feet of the county road it is addressed to.
- If the building is more than 150 feet from the county road, and its temporary electrical service is more than 50 feet from the county road, a stake or sign must be posted within 25 feet of the driveway.

PERMANENT POSTING OF HOUSE NUMBER – All residence and business dwellings must post their assigned house numbers to meet the following requirements:

- Numbers must be at least 4 inches in height and reflective.
- Numbers must be posted on the side of the house facing the county road it is addressed on. Numbers must be legible from the county road, and free of obstructions.
- If the house is more than 150 feet from the county road it is addressed on, numbers must be on the mailbox or a stake at the beginning of the driveway, and easily visible from the county road it is addressed on. If posted on the mailbox, numbers must be on both sides of it, and the mailbox must be within 25 feet of the driveway.

USPS MAILBOX GUIDELINES – Every new mailbox design should be reviewed and receive the Postmaster General's seal of approval before it goes to market. If you opt to construct your own mailbox, it must meet the same standards as manufactured boxes, so show the plans to your local postmaster for approval. USPS recommends an annual mailbox checkup to avoid damage to your mail or difficulty identifying your address.

PLACING THE MAILBOX:

- Position your mailbox 41- to 45-inches from the road surface to the bottom of the mailbox or point of mail entry.
- Place your mailbox 6- to 8-inches back from the curb. If you do not have a raised curb, contact your local postmaster for guidance.
- Put your house or apartment number on the mailbox.
- If your mailbox is on a different street from your house or apartment, put your full street address on the mailbox.

- If you are attaching the box to your house, make sure the postal carrier can reach it easily from your sidewalk, steps, or porch.

INSTALLING THE POST: The best mailbox supports are stable but bend or fall away if a car hits them. The Federal Highway Administration recommends:

- A 4-inch x 4-inch wooden support or a 2-inch diameter standard steel or aluminum pipe
- Avoid unyielding and potentially dangerous supports, like heavy metal pipe, concrete posts, and farm equipment (e.g., milk cans filled with concrete).
- Bury your post no more than 24" deep.

INSPECTION STANDARDS

FOOTING INSPECTION

- Where quantifiable data created by accepted soil science methodologies indicate expansive soils, compressible soils, shifting soils, or other questionable soil characteristics are likely to be present. The building official shall determine whether to require a soil test to determine the soil's characteristics. This test shall be done by an approved agency using an approved method. (R401.4)
- Concrete footings on single story vinyl sided homes shall be a minimum of 8 inches in thickness.
- Concrete footings for brick homes or two-story homes shall be at least 10 inches in thickness.
- Exterior footings shall be placed not less than 12 inches below the undisturbed ground surface. (R403.1.4)
- All exterior walls shall be supported on continuous solid or fully grouted masonry or concrete footings. (R403.1)
- Footers must be free of all organics & vegetation

FOUNDATION INSPECTION

- Wood sill plates shall be anchored to the foundation with a minimum of ½ inch diameter anchor bolts, bedded 7" into masonry, and shall not be spaced greater than 6 feet on center & within 12" of corners. (R403.1.6)
- For vented crawl spaces, there shall be one foundation vent for each 150 square feet of first floor living space.
- Under floor access shall be a minimum opening of 18 inches by 24 inches. (R408.4)
- The underfloor grade shall be cleaned of all vegetation and organic material. Wood forms used for placing concrete shall be removed before a building is occupied or

used for any purpose. Construction materials in crawl space shall be removed before the building is occupied. (R408.5)

- Basement walls shall be damp-proofed from the higher of the top of the footing or 6 inches below the top of the basement floor, to the finished grade. (R406.1)
- Drains shall be provided around concrete or masonry foundations that retain earth and enclose habitable or usable spaces located below grade. (R405.1)
- Cap blocks must be provided for piers/pillars (minimum 4" solid).
- Floor girders must have a minimum bearing of 1.5" on metal or wood, or 3" bearing on masonry. (R502.6)

CONCRETE SLAB INSPECTION

- Concrete floors for basements or garages shall be a minimum of 3.5 inches in thickness, with a 12" turn down footer if a monolithic slab is utilized. (R506.1)
- A vapor retarder with joints lapped not less than 6 inches shall be placed between the concrete floor slab and the base course, for heated space and heated rooms above. (R506.2.3)
- Plumbing rough-in must be performed at this time if the dwelling is to be erected on a monolithic slab. Plumbing system (Drain Waste Water) must be inspected and tested at this time.
- Plumbing must be exposed during inspection and fully bedded. (Plumbing cannot be placed on blocks or other debris).
- Slab **MUST BE ON UNDISTURBED SOIL**, or be on engineered backfill.

MECHANICAL

- Cumberland County Building Codes does not require a fresh air intake on HVAC units.
- Dryer Venting has a Max length of 35 Feet from the connection to the appliance, to the outlet terminal. 90' elbows have a reduction of 5ft, 45' elbows have a reduction of 2.5ft, Duct must be supported every 12ft. (M1502.4.5.1)
- Dryer Vent Duct must have smooth interior finish, be constructed of metal not less than 28 gage, must not be joined with screws, and have a minimum 4" diameter. (M1502.4)
- Venting must not be less than 3ft from air intake openings, operable doors or windows. (M1504.3)
- Bathroom exhaust **MUST** vent directly to the outdoors. (M1505.2)
- Furnaces and air-handling systems that supply air to living spaces shall not supply air to or return air from a garage. (M1601.6)
- All supply boots, return boxes & plenums and ductwork connections must be air sealed.

- In unoccupied concealed crawlspaces that contain fuel-fired equipment, or electric powered heating appliances, a sprinkler shall be installed above the equipment only; sprinklers shall not be required in the remainder of the space. (P2904.1.1) The water supply must originate from the Domestic Cold Water Supply.

ROUGH-IN FRAMING

- Truss/rafter to top plate connection shall be made with an approved roof tie-down. (R802.11.1)
- Where collar ties are used to connect opposing rafters, they shall be located in the upper third of the attic space. Collar ties shall not be spaced more than 4 feet on center. (R802.4.6)
- Notches on cantilevered portions of rafters are permitted provided that the dimensions of the remaining portion of the rafter is not less than 3.5 inches and the length of the cantilever does not exceed 24 inches. (R802.7.1.1)
- Cuts, notches, and holes bored in trusses, structural composite lumber, structural glue laminated members, cross laminated timber members, or I-joists, are prohibited except where permitted by the manufacturer's recommendations or where the effects of such alterations are specifically considered in the design of the member by a registered design professional. (R802.7.2)
- Installation of purlins to reduce rafter span is permitted. Purlins shall be sized not less than the required size of the rafters they support. Purlins shall be continuous and shall be supported by 2-inch x 4-inch braces installed to bearing walls at a slope not less than 45 degrees from horizontal. The braces shall be spaced not more than 4 feet on center and the unbraced length of braces shall not exceed 8 feet. (R802.4.5)
- The ends of rafters, ceiling joists, floor joists, or other wood members shall have not less than 1.5 inches of bearing on wood or metal, and not less than 3 inches on masonry or concrete.
- The maximum allowed vertical span of 2 x 4 walls 16 inches on center, is 10 feet. Spans higher than that on 16-inch centers must be increased to 2 x 6 studs. (R602.3(5))
- Girder and header spans are listed in table. (R602.7(1))
- Attic access: The rough framing opening shall be not less than 22 inches by 30 inches. (R807) This must be framed out on the rough-in inspection.

ROUGH-IN PLUMBING

- DWV systems shall be tested on completion of the rough piping installation. (R2503.5.1) Head test must be filled to the highest point of the pipe for leak detection for slabs.

- Must provide at least 50 psi pressure test with gauge on supply lines. (P2503.7)
- Where supply lines and drain lines are installed within 1 ¼ inch of the nearest edge of the wood member, a nail guard shall be provided. (R2603.2.1)
- Horizontal drainage piping shall be installed in uniform alignment at uniform slopes not less than ¼ unit vertical in 12 units horizontal for 2-inch pipe or smaller and not less than 1/8 unit vertical in 12 units horizontal. (R3005.3)
- Plumbing pipe vent boots must be installed on rough-in inspection.
- Sanitary tees shall not have a vertical-to-horizontal connection or a horizontal-to-horizontal connection. (P3005.1)
- In slab, plumbing must be bedded and not on a lifted platform such as a piece of block.

FINAL INSPECTION

- Final electrical inspection must have passed **first** before final inspection can be requested.
- Buildings shall be provided with approved address identification. The address identification shall be legible and placed in a position that is visible from the street or road fronting property. Each character shall be not less than 4 inches in height. (R319.1) The code states that "the approved street numbers must be placed in a location readily visible from the street or roadway fronting the property if a sign on the building would not be visible from the street. Address posting on a mailbox is not adequate for emergency responders when they are grouped or placed across the street from the dwelling."
- Lots shall be graded to drain surface water away from foundation walls. The grade shall not be fewer than 6 inches within the first 10 feet. (R401.3) If grade is higher than 30 inches within 36 inches of the porch, a guard must be installed. (R312.1.1)
- Required guards at open sides of walking surfaces, including stairs, porches, balconies or landings shall not be less than 36 inches in height as measured vertically above the adjacent walking surface or the line connecting the nosing. (R312.1.2)
- Cleanout must be provided outside the dwelling unit.
- Drip edges shall be provided at eaves and rake edges of shingle roofs. (R905.2.8.5)
- Openings between the garage and residence shall be equipped with solid wood doors not less than 1 3/8 inches in thickness, solid or honeycomb core steel doors not less than 1 3/8 thick, or 20-minute fire rated doors, equipped with a self-closing or automatic closing device. (R302.5.1) NO glass in door that communicates with living space from garage.
- Riser height on steps have a maximum rise of 7.5", all riser heights must be within 3/8" of each other. (R311.7.5.1)

- Stair tread depth shall not be less than 10" deep, all tread depths must be with 3/8" of each other. (R311.7.5.2)
- Steps with 4 or more risers require a Handrail. (R311.7.8)
- Handrails must be continuous for the full length of the flight and must terminate at the top and bottom of the flights. (R311.7.8.4)
- Encapsulated (non-vented) crawlspaces must have either a return & supply air provided from the HVAC unit, or a Dehumidifier installed.

DECKS

- Deck footings must extend below the frost line which is 12 inches below the virgin earth.
- Height of deck posts. 4 x 4 posts can have a maximum height of 6 feet and 9 inches. 6 x 6 posts can span a maximum height of 14 feet. (R507.4)
- Joist ends and bearing locations shall be provided with lateral resistance to prevent rotation. Approved joist hangers shall be provided due to joint restraint. (R507.6.2)
- Deck ledgers shall be a minimum of 2 x 8 nominal pressure treated, pressure treated number 2 grade or better lumber. Deck ledgers shall not support concentrated loads from beams or girders. Deck ledgers shall not be supported on stone or masonry veneer. Ledger to band joist connection must be supported by posts to deck footings or with approved code compliant fasteners.

MEANS OF EGRESS, EMERGENCY ESCAPE, AND RESCUE OPENING

- Means of egress is a continuous and unobstructed path of vertical and horizontal egress travel from all portions of the dwelling to the required egress door without requiring travel through a garage. The required egress door shall open directly into a public way or to a yard or a court that opens directly into a public way. A landing is required for all exterior doors. One riser coming down from the threshold of the door to the landing is permissible, as long as that riser doesn't exceed 7 ¾ inches.
- Emergency escape and rescue opening are required in basements, habitable attics, and every sleeping room. Emergency escape and rescue opening minimum window dimensions are 24 inches vertically and 20 inches horizontally. First story emergency escape and rescue opening must have at least 720 square inches of open space in the operable part of the window. Second story emergency escape and rescue opening must have a minimum of 820 square inches of open space in the operable part of the window.
- Basements in a dwelling unit and every sleeping room below the first story (including rooms that could be used for sleeping such as dens, a study, etc.) must have at least one operable window or door approved for emergency escape or rescue which shall open directly into a public street, public alley, yard, or exit court.

The units must be operable from the inside to provide a full clear opening without the use of separate tools. Garage doors do not count as a means of escape.

- For full egress, escape or rescue windows are required to have a minimum net clear openable area of 5.7 square feet. Exception: may be reduced to 5.0 square feet if 44" or less from exterior ground level to sill in 1 and 2 family dwellings. The minimum net clear openable height dimension must be 24 inches. The minimum net clear openable width dimension must be 20 inches. They must also have a finished sill height (clear opening) of not more than 44 inches above the floor.
- Where the existing rough opening does not allow for full egress, replacement windows must have a minimum opening of 20 inches clear width, 22 inches clear height, 4 square feet of net opening and a finished sill height (clear opening) of not more than 48 inches to a permanent walkable surface. If the existing rough opening cannot accommodate these dimensions, the rough opening must be enlarged to allow installation of a full egress window.

GLAZING OF WINDOWS IN HAZARDOUS LOCATIONS

- Where single pane windows are bigger than nine square feet and within 18 inches of the floor, safety glazing is required. Where the glazing of the window is within 24 inches of either side of the door in the plane of the door in a closed position, safety glazing is required.
- Safety glazing is required where the bottom exposed edge of the glazing is less than 36 inches above the plane of the adjacent walking surface of stairways, landings between flights of stairs, and ramps. (R308.4.6)
- Glazing in walls, enclosures, or fences containing or facing hot tubs, spas, whirlpools, saunas, steam rooms, bathtubs, showers, and indoor or outdoor swimming pools where the bottom exposed edge of the glazing is less than 60 inches from the water's edge, shall be safety glazed. (R308.4.5)
- For minimum light, all sleeping rooms and other habitable rooms require glazing equal to at least 8% of the floor area of the room and a total glazed area of at least 10 square feet, or provide adequate artificial illumination. Minimum ventilation of 4% of the floor area with a minimum of 5 square feet openable, or provides adequate mechanical ventilation.
- Safety glazing is required on doors, storm doors, railings, within 24 inches of a door, or when panes are over 9 square feet and within 18 inches of the floor.

FIRE PROTECTION OF FLOORS

- Floor assemblies that are not required elsewhere in this code to be fire-resistance rated, shall be provided with a 1/2-inch gypsum wallboard membrane, 5/8-inch wood structural panel membrane, or equivalent, on the underside of the floor

framing member. Penetrations or openings for ducts, vents, electrical outlets, lighting, devices, luminaries, wires, speakers, drainage, piping, and similar openings or penetrations shall be permitted. (R302.13)

- The application of gypsum wallboard or other approved material intends to provide some protection to the floor system against the effects of fire and delay collapse of the floor. This provision is primarily aimed at light-frame construction consisting of I-joists, manufactured products considered most susceptible to collapse in a fire. Solid-sawn lumber and structural composite lumber perform fairly well in retaining adequate strength under fire conditions, and floors framed of nominal 2 x 10s or larger of these materials are exempt from these fire protection requirements. Fire protection also is not required if sprinklers are installed to protect the space below the floor assembly. (Basements/crawlspaces: sprinkler installation over each appliance only)
- Similar to the fire separation requirements for an attached garage in section R302.6, the membrane applied to the underside of the floor system does not form a fire-resistant-rated assembly. The membrane acts to shield light-frame floor systems from the heat of a fire originating in the space below the floor. The intent is for the floor system to perform similarly to unprotected 2 x 10 solid-sawn lumber floor joists and to delay structural collapse of the floor system. The code does not require any special treatment of joints, penetrations, or openings in the ceiling membranes. The code does not regulate openings and penetrations in the membrane applied to the underside of the floor system.

SMOKE/CO2 ALARMS

- Smoke alarms shall comply with NFPA 72. Alarms shall be listed in accordance with UL 217. Combination smoke and carbon monoxide alarms shall be listed in accordance with UL 217 and UL 2034.
- Where alterations, repairs, and/or additions requiring a permit occur, the individual dwelling unit shall be equipped with smoke alarms installed as required by new dwellings. (R314.2.2)
- Interconnection – where 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 of the alarms in the individual dwelling unit. Physical interconnection of smoke alarms shall not be required where listed wireless alarms are installed and all alarms sounds upon activation of one alarm. (R314.4)
- For new construction, carbon monoxide alarms shall be provided in dwelling units where either or both of the following exist:
 - The dwelling unit contains a fuel fired appliance.

- The dwelling unit has an attached garage with an opening that communicates with the dwelling unit.
- Location – carbon monoxide alarms in dwelling units shall be installed outside of each separate sleeping area in the immediate vicinity of the bedrooms. (R315.3)
- Each story must have a carbon monoxide alarm.

ENERGY CODES

- Cumberland County is listed in Zone 4

Table 301.3 (2) International Climate Zone Definitions

Zone 4a & 4b: IP units = $CDD50^{\circ} F \leq 4500$ and $HDD65^{\circ} F \leq 5400$

SI units = $CDD10^{\circ} C \leq 2500$ and $HDD18^{\circ} C \leq 3000$

Table 402.1.1 Insulation and Fenestration by Component

R-38 Ceilings R-10 Foundations

U-0.40 Windows

R-13 Walls

AUTHORITY TO DISCONNECT SERVICE UTILITIES

- The building official shall have the authority to authorize disconnection of utility service to the building, structure, or system regulated by this code. This is in case of emergencies or hazards to life or property. (R111.3)