CITY OF COPPERHILL, TN
BUILDING DEPARTMENT

Job Site Requirements:

- **Post your construction address on-site visible from the street for identification**
- **Install erosion controls and a construction exit as needed to control dirt and debris from leaving the work site**
- **Provide sanitation facilities for workers on site**

Order of inspections: (Commercial & Residential)

- **Footings**
- **Plumbing Slab Rough-in** *(if applicable) (requires water or low-pressure air test)*
- **Concrete Slab** *(if applicable) (we check for reinforcement and plastic)*
- **Foundation** *(anchor bolts or straps if crawlspace or basement construction, we check anchors with framing if slab construction)*
- **Building Rough-in inspections**
    - **Framing** *(with anchors if slab construction)*
    - **Plumbing** *(requires water or low-pressure air test through the roof)*
    - **Mechanical** *(HVAC, Dryer duct, bathroom exhaust)*
    - ***Electrical*** *(inspection done by the TN State Electrical Inspector)*
    - ***Fuel gas*** *(pressure test of gas lines with low pressure gauge)*
- **Building Insulation (exterior envelope only)**
- **Building Finals**
    - **Building** *(final grading, driveways, and sidewalks complete)*
    - **Plumbing**
    - **Mechanical**
    - **Electrical** *(inspection done by the TN State Electrical Inspector)*
    - **Ground stabilization complete**

CITY OF COPPERHILL, TN
BUILDING DEPARTMENT

How to apply for a permit:

Residential permits: (1 & 2 family dwellings using the 2018 IRC)

- **Request an application for permit from City Hall**
- **If building new or creating an addition to an existing structure, please provide a site sketch showing all setbacks and driveways as applicable. If a survey is available this is best, but a sketch is usually acceptable if all information below is provided:**
- **Provide a narrative giving the entire scope of work planned for the proposed residential project including:**
  - ***In a Special Flood Hazard Area, Flood-Resistant construction must be followed***
  - Explain if the scope of work is new or addition / alteration and what all is included in the project
  - Type of home (single family, duplex, townhome, modular)
  - Type of foundation to be used (slab, basement, crawlspace, etc) (pier construction requires stamped engineered footing details)
  - Number of floors
  - Number of bedrooms or number of bedrooms being added.
  - Number of bathrooms or number of bathrooms being added.
  - Provide the owner's name, address, and contact info including a good call back number
  - Provide the contractor's name, state license number and contact info if different from owner. (You are allowed to permit your own home if it is your primary dwelling. If it is a residential rental that you own, you are required by Tennessee State Law to use a licensed contractor for any permittable work)

CITY OF COPPERHILL, TN
BUILDING DEPARTMENT

How to apply for a permit:

Commercial permits:

(any construction not in the IRC. This permit uses the 2018 IBC and other applicable codes)

- **Request an application for permit from City Hall**
- **If building new or creating an addition to an existing structure, please provide a site plan showing all setbacks, driveways parking lots and ADA elements as applicable. Sometimes this requires a survey, sometimes an accurate site sketch will work when all information below is provided:**
- **Provide a narrative giving the entire scope of work planned for the proposed residential project including:**
  - Explain if the scope of work is new or addition / alteration and what all is included in the changes.
  - Type of commercial use (Assembly, Business, Mercantile, factory, storage, etc)
  - Type of foundation to be used (slab, basement, crawlspace, etc)
  - Number of floors
  - If the project is a change of use or occupancy and does not require a stamp from a registered design professional, there will still be a required Life Safety Drawing (see next page for information for tenant spaces less than 5,000 sf.)
  - Show how ADA requirements are to be met if applicable
  - Provide the owner's name, address, and contact info.
  - Provide the contractor's name, state license number and contact info if different from owner. (The business owner is allowed to purchase their own building permit for only the building portion of work when the total is under $25,000. All sub work and all building work exceeding $25,000 requires a State licensed contractor purchase all applicable permits for permittable work)

CITY OF COPPERHILL, TN
BUILDING DEPARTMENT

Do I need stamped drawings?

When a Design Professional is Required (Architect)

Plans and specifications are required for all structures classified as

- Assembly
- Educational
- Institutional

MUST HAVE PLANS prepared by a Tennessee registered design professional and these plans must be submitted to the State Fire Marshalls office in Nashville for Review. Unless specifically exempted below or elsewhere in these guidelines, all other structures also require the appropriate Tennessee registered design professional to prepare the required plans.

When a Design Professional is NOT Required:

following structures below ARE NOT REQUIRED to be prepared by a registered design professional (architect) unless required by the building official due to project specific criteria:

- Structures classified as business, factory-industrial, hazardous, mercantile, residential, and storage occupancies that are both:

  (1) less than three stories in height
  (2) less than 5,000 square feet in total gross area.

- One-family and two-family dwellings and domestic outbuildings (USES THE 2018 IRC)
- Farm buildings not designed or intended for human occupancy.

Tenant Spaces Less Than 5,000 sf

For alterations to tenant spaces classified as business, factory-industrial, hazardous, mercantile, residential, and storage that are less than 5,000 sf in area, drawings by a registered design professional ARE NOT REQUIRED when:

- The tenant shell is not required to be altered.
- The tenant space is separated from other tenant spaces by the minimum fire-rated separation required by the 2018 International Building Code for the proposed use.
- The egress requirements are not being altered.
- The fire protections system is not being altered.
- There are no structural alterations.
- Not otherwise required by the building official

CITY OF COPPERHILL TENNESSEE
BUILDING DEPARTMENT
RESIDENTIAL INSPECTION CHECKLIST

Please note: This list is not inclusive of all items that may require inspection. Failure to be ready for a requested inspection may result in a re-inspection fee. In a Special Flood Hazard Area, all provisions of the municipal code and Flood-Resistant construction must be followed.

MECHANICAL ROUGH IN

GENERAL

1. Fuel burning appliances cannot be installed in sleeping rooms, bathrooms, toilet rooms, storage closets, or in a space that opens into such rooms or spaces unless they are direct vent or listed for use within a living space. (G2406.1) (G2406.2)
2. Heat producing equipment installed shall maintain clearances to combustibles as required by the listing of the appliance. (M1402.2) (M1306.1)
. Minimum working space around furnace or air handler is 3".

UNDER FLOOR/ATTICS

1. Equipment and appliances installed in an underfloor area suspended from the floor shall have a minimum clearance of 6" above grade or installed on a slab extending 3" above adjoining grade. (M1305.1.4.1)
2. Equipment installed in attics shall be provided with an opening and a clear passageway large enough to remove the largest appliance, but not less than 30" high and 22" wide, not more than 20' long from the opening to the appliance. The passageway shall have continuous solid flooring not less than 24" wide. A level service space at least 30" deep and 30" wide shall be present along all sides of the appliance where access is required. Exceptions: The passageway is not required when the appliance can be serviced from the attic access opening. Where the passageway is unobstructed and not less than 6' high and 22" wide, the passageway can extend to not more than 50' long.

GARAGE

1. When equipment which has a flame, generates a spark, or uses a glowing ignition source is open to the space in which it is installed, it shall be elevated such that the source of ignition is at least 18" above the floor. **Exception: Elevation of the ignition source is not required for appliances that are listed as flammable vapor ignition resistant.**

CITY OF COPPERHILL TENNESSEE
BUILDING DEPARTMENT
RESIDENTIAL INSPECTION CHECKLIST

2. Ducts which penetrate a wall or ceiling separating the garage from the dwelling are 26 gauge with no openings to the garage. (R302.5.2)
3. Appliances shall not be installed in a location subject to vehicle damage except where protected by approved barriers, such as a bollard embedded in concrete. (M1307.3.1)

CONDENSATE

1. Condensate from all cooling coils or evaporators shall be conveyed from the drain pan outlet to an approved place of disposal. Such piping shall maintain a minimum horizontal slop in the direction of discharge of not less than 1/8 unit vertical in 12 units horizontal (1% slope). Condensate shall not discharge into a street, alley, or other area where it would cause a nuisance (this includes areas where erosion along the foundation or underneath the appliance might occur). (M1411.3)
2. Condensate piping must be a minimum ¾" pipe. (M1411.3.2)
3. Condensate shall not have a direct connection to the building drain/waste/vent system. If the condensate is connected to the DWV system using an indirect connection, the connection must be trapped and the trap must be prevented from drying out.
4. A secondary means of protection from condensate is necessary in addition to the primary condensate disposal, where damage to building components can occur from overflow or stoppage of condensate piping. This can be achieved through a condensate overflow shutoff switch installed in the pan, or the outlet of the pan. (M1411.3.1)

DUCTING

1. Duct to ground minimum 4" clearance. (M1601.4.7)
2. Duct in or under concrete encased in a minimum 2" of concrete. (M1601.1.2)
3. Round ducts have crimped joints lapped minimum 1" and fastened with (3) sheet-metal screws or rivets equally spaced around the joint. (M1601.4.1)
4. Joints, seams, and fittings of ducts sealed with mastic or other approved means. (M1601.4.1)
5. Flex duct supported per manufacturer's specifications, with no harsh bends or kinks in the run. (M1601.4.3)
6. Flexible ducts labeled as "Flexible Air Ducts" shall not be limited in length. Flexible ducts labeled as "Flexible Air Connectors" shall be limited to 14' in length. (IMC 603.6.1.1) (IMC 603.6.2.1)
7. Metal duct minimum support every 10'. (M1601.4.3)

CITY OF COPPERHILL TENNESSEE
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RESIDENTIAL INSPECTION CHECKLIST

8. Return air cannot be taken from bathroom, kitchen, toilet room, mechanical room, closet, furnace room, other dwelling unit, or garage. (M1602.2)
9. Return air inlets cannot be located within 10' of any fuel burning appliance, fire box, or draft hood located in the same space. (M1602.2)
10. Building framing cavities shall not be used as air ducts. (IECC 403.2.3)

VENTS AND CONNECTORS

1. Where two gas appliances are vented through a common vent connector, it is equal to the largest connector plus 50% of the smaller flue outlet and not less than the combined area of the flue outlets for which it acts as a common connector. (G2427.10.3.4)
2. Vent connector clearances to combustibles per manufacturer's listing or performance standards. (M1803.3.4) (M1306.1) (G2427.7.8)
3. Single wall vents cannot penetrate a wall, floor, or ceiling without a listed pass through assemble, except for gast vents – exterior combustible walls only – with a "ventilated metal thimble". (M1801.1) (G2427.7.7)
4. Vent terminations installed per the manufacturer's listing. (M1804.2) (G2427.6.3)
5. Bathroom exhaust fans must terminate to the exterior and cannot terminate in the attic.
6. Exhaust vent terminations for mechanical draft and direct venting must be the correct distance from a door, operable window, or a gravity air inlet into a building. (M1804.2.6) (G2427l.8)
7. Gas vent piping has a minimum ¼" /foot upward slope.
8. Gas vent terminations shall be proper height from roof (**See Attached Figure G2427.6.3 on next page**). Gas vents greater than 12" shall terminate 2' above and 10' away from roof. (G2427.6.3)
9. Where vents extending into an attic pass through insulated assemblies, an insulation shield of 26 gage sleeve not less than 2" above the insulation, secured in place and shall be installed to provide clearance between the vent and the combustible insulation materials, specified by the vent manufacturer. (G2426.4)

CITY OF COPPERHILL TENNESSEE
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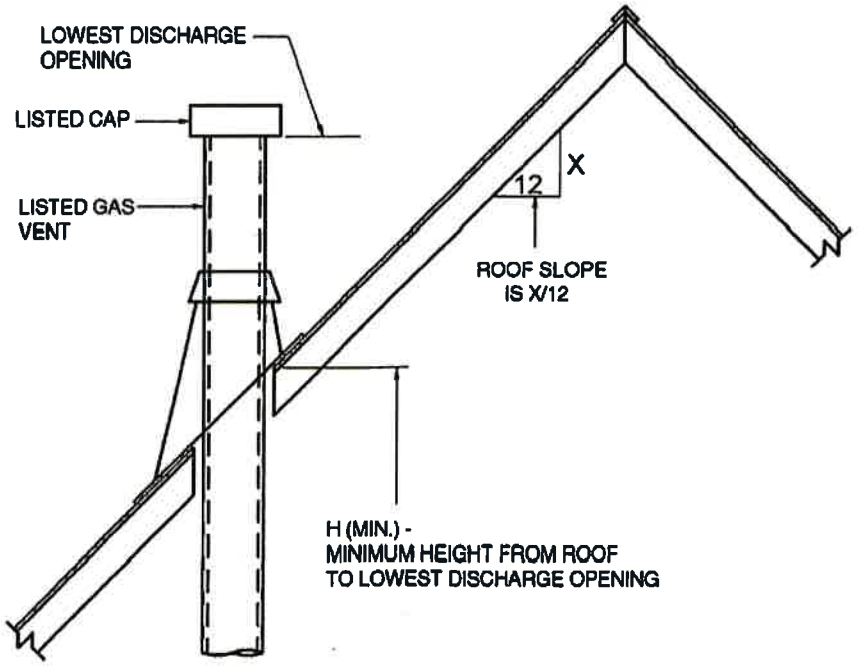
RESIDENTIAL INSPECTION CHECKLIST



ROOF SLOPE	H (minimum) ft
Flat to $^{6}/_{12}$	1.0
Over $^{6}/_{12}$ to $^{7}/_{12}$	1.25
Over $^{7}/_{12}$ to $^{8}/_{12}$	1.5
Over $^{8}/_{12}$ to $^{9}/_{12}$	2.0
Over $^{9}/_{12}$ to $^{10}/_{12}$	2.5
Over $^{10}/_{12}$ to $^{11}/_{12}$	3.25
Over $^{11}/_{12}$ to $^{12}/_{12}$	4.0
Over $^{12}/_{12}$ to $^{14}/_{12}$	5.0
Over $^{14}/_{12}$ to $^{16}/_{12}$	6.0
Over $^{16}/_{12}$ to $^{18}/_{12}$	7.0
Over $^{18}/_{12}$ to $^{20}/_{12}$	7.5
Over $^{20}/_{12}$ to $^{21}/_{12}$	8.0

For SI: 1 foot = 304.8 mm.

FIGURE G2427.6.3 (503.6.4)
GAS VENT TERMINATION LOCATIONS FOR LISTED CAPS 12 INCHES OR LESS IN SIZE AT LEAST 8 FEET FROM A VERTICAL WALL

CITY OF CLEVELAND, TN
DEVELOPMENT AND ENGINEERING
RESIDENTIAL INSPECTION CHECKLIST

CLOTHES DRYERS

1. Clothes dryer exhaust ducts of metal with smooth interior surfaces, with joints running in the direction of air flow. (M1502.4) (G2439.5)
2. Protective shield steel plates of .062 thickness where nails or screws are likely to penetrate duct, including at framing members < 1 ¼" between duct and finished face of framing member. (M1502.5) (G2439.5.3)
3. Screws or fasteners used to join ducts must not protrude more than 1/8" into the inside of the duct.. (M1502.4.2)
4. Duct connector 4" minimum or appliance outlet size. (M1502.4.1) (G2439.5)
5. Dryer duct must not exceed 35' or the maximum length specified by the dryer manufacturer's installation instructions. The following table shall be used to determine the equivalent lenth of a fitting, unless appliance manufacturer's instructions say otherwise (M1502.4.4):

TABLE M1502.4.4.1
DRYER EXHAUST DUCT FITTING EQUIVALENT LENGTH

DRYER EXHAUST DUCT FITTING TYPE	EQUIVALENT LENGTH
4 inch radius mitered 45 degree elbow	2 feet 6 inches
4 inch radius mitered 90 degree elbow	5 feet
6 inch radius smooth 45 degree elbow	1 foot
6 inch radius smooth 90 degree elbow	1 foot 9 inches
8 inch radius smooth 45 degree elbow	1 foot
8 inch radius smooth 90 degree elbow	1 foot 7 inches
10 inch radius smooth 45 degree elbow	9 inches
10 inch radius smooth 90 degree elbow	1 foot 6 inches

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 degree = 0.0175 rad.

6. Exterior termination is backdraft dampered with no screens, and 3' minimum away from any openings into building. (M1502.3) (G2439.3)
7. Clothes dryer ducting concealed in construction must be labeled with the total equivalent length. Label shall be located within 6' of the exhaust connection. (M1502.4.6)
8. If dryer is not installed at time of occupancy, exhaust duct shall be capped at the location of the future dryer. (M1502.4.6) (G2439.5.7)
9. Gas dryer shutoff valve installed immediately ahead of connector and in the same room. (G2422.1.2.4)

CITY OF CLEVELAND, TN
DEVELOPMENT AND ENGINEERING
RESIDENTIAL INSPECTION CHECKLIST

AIR CONDITIONING

1. Refrigerant lines shall be insulated to R-4. IRC M1411.5
2. Condenser shall be mounted on a minimum 3" concrete pad.
3. All exterior wall penetrations shall be sealed.

CITY OF COPPERHILL TENNESSEE
BUILDING DEPARTMENT
RESIDENTIAL INSPECTION CHECKLIST

Please note: This list is not inclusive of all items that may require inspection. Failure to be ready for a requested inspection may result in a re-inspection fee. In a Special Flood Hazard Area, all provisions of the municipal code and Flood-Resistant construction must be followed

PLUMBING

UNDERGROUND

Sewer

1. **The building sewer shall be tested before concealment by insertion of a test plug at the point of connection with the public sewer and filling the building sewer with water, testing with not less than a 5' head of water and be able to maintain such pressure for 15 minutes. The test must be on at the time of inspection. (P2503.2) (P2503.4)**
2. Minimum 1/8" per foot slope when pipe size is 3" diameter or greater. (P3005.3)
3. All fittings shall be properly primed and glued. (P3003)
4. A cleanout is required near the junction of the building drain and building sewer. It shall be either inside or outside the building wall, at floor level or finish grade. An approved two-way cleanout shall be permitted to serve as the cleanout for the building drain and sewer. A cleanout at this junction is not required where a cleanout on a 3" or larger diameter soil stack is located within 10' of the developed length of the drain and sewer junction. (P3005.2.7)
5. Additional cleanouts shall be installed as needed. A cleanout is required every 100' of developed sewer length, and at any change of direction greater than 45 degrees. (P3005.2)
6. If the sewer is located under a driveway or parking surface, the pipe must be 36" deep and filled with an approved loose fill, tamped every 6" to protect the pipe. If the 36" depth cannot be achieved, the pipe must be protected with a concrete cover over the trench, and the sewer pipe must be sleeved with a pipe 2 sizes larger to prevent direct contact with the concrete. (P2603.4, IPC Protection of Piping, and City requirements)
7. Sewer pipe must be bedded with compacted earth, sand, fine gravel, or similar granular material to support the pipe for the full length. (P2604.1)
8. Backfill over pipe shall be free from large rocks, broken concrete, or similar until the pipe is covered by not less than 12" of earth, sand, or fine gravel placed in 6" layers and tamped.
9. Building sewer shall be sized appropriately, but shall not be smaller than 3" when a water closet is served. Cleanou connection to tap must be 4".

CITY OF COPPERHILL TENNESSEE
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10. Sewer Material: The building sewer shall be of a material approved by the code. SDR 35 (green pipe) is allowed when the water line and sewer line are separated by 5' of earth horizontally. When sewer and water line are placed in the same trench, the pipe must be of PVC schedule 40 or similar as allowed by code.
11. The sewer shall be protected from frost, and shall never be less than 6" below finish grade. For sewer depth requirements in relation to water service piping, see Water Service requirements section.

Water Service

1. **Water service lines shall be tested before concealment with water at operating pressure, or for pipes other than plastic pipe, a 50 psi air test. Air testing of plastic pipe is not allowed. The test must be on at the time of inspection. (P2503.2) (P2503.7) This department has contacted ICC for a ruling on air testing PEX, and ICC ruled that it is a plastic pipe and therefore cannot be tested with air.**
2. Water service line shall be sized appropriately, but not less than ¾" diameter. (P2903.7)
3. Piping shall be supported for the entire length of its run. (P2605)
4. A pressure regulator and shut off valve is required to be installed before the water service line connects to the water distribution system of the building, and must be readily accessible. (P2903.3.1)
5. Based on local frost depth, the underground water service line shall be at least 12" deep for its entire run. (P2603.5)
6. The water service line and sewer are allowed to be located in the same trench when the sewer pipe is of a material that is approved for use under a building slab (ex. PVC schedule 40) (P2905.4.2), and the sewer must be a minimum of 12" below the water line. Otherwise, the water line and sewer must maintain 5' of horizontal separation distance.
7. When a water service line crosses a sewer line perpendicularly, no separation is required if the water service line is sleeved 5' in each direction from the center line of the sewer pipe.

Water Distribution and Drain/Waste/Vent system (DWV)

1. **The DWV system shall be tested before concealment with no less than a 5' head test of water for 15 minutes, or for piping other than plastic, a 5psi air test. The test must be on at the time of inspection. (P2503.2)(P2503.5)**
2. **Water distribution lines shall be tested before concealment with water at operating pressure, or for pipes other than plastic pipe, a 50 psi air test. Air testing of plastic pipe is not allowed. The test must be on at the time of**

CITY OF COPPERHILL TENNESSEE
BUILDING DEPARTMENT
RESIDENTIAL INSPECTION CHECKLIST

inspection. (P2503.2) (P2503.7) This department has contacted ICC for a ruling on air testing PEX, and ICC ruled that it is a plastic pipe and therefore cannot be tested with air.

3. Minimum ¼" per foot slope when pipe size is 2-1/2" diameter or less; minimum 1/8" per foot slope when pipe size is 3" diameter or greater. (P3005.3)
4. Pipes through foundation walls shall be sleeved with a pipe two (2) sizes larger. (P2603.4)
5. No piping to pass through footings without proper provisions made to protect the piping and to insure the footing is structurally sufficient to span the pipe. (P2603.4, Code and Commentary)
6. DWV pipes and water distribution piping passing through concrete slab shall be protected by sheathing, wrapping, or other means to protect from corrosion and to allow expansion and contraction of the material. (P2603.3)

ABOVE GROUND

DWV

1. **The DWV system shall be tested at time of Rough-In Inspection with water filled to the top of the highest vent in the system, or for piping other than plastic, a 5psi air test. (P2503.2) (P2503.5)**
2. Pipes are to be protected with shield plates that extend not less than 2" above sole plates and below top plates, when the pipe is located within 1-1/2"of the face of the stud. (P2603.1)
3. Pipes are to be properly supported to ensure alignment, prevent sagging, and allow for expansion and contraction. (P2605.1)
4. Every trap and trapped fixture shall be properly vented. No "s" traps are allowed. (P3101.2.1)
5. Traps installed in location prone to drying out shall be fitted with a trap primer, or shall be of the deep seal design. (P3201.2)
6. The vent system serving each building drain shall have at least one vent pipe that extends to the outdoors. This vent shall be a dry vent that connects to the building drain. (P3102.1) (P3102.2)
7. Vents and branch vent pipes shall have proper fall to allow moisture and condensate to drain back to the waste pipe. (P3104.2)
8. An open vent terminal from a drainage system shall not be located less than 4' directly beneath any door, operable window, or other air intake of the building, nor shall any vent be within 10' horizontally of opening. Vent terminals shall not terminate under the overhang of a structure with soffit vents. (P3103.5) (P3103.6)
9. Horizontal vent pipes shall be not less than 6" above the flood level rim of the highest fixture served. (P3104.5)

CITY OF COPPERHILL TENNESSEE
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10. Maximum distance from a fixture "p" trap to the vent should comply with the following table:

TABLE P3105.1
MAXIMUM DISTANCE OF FIXTURE TRAP FROM VENT

SIZE OF TRAP (Inches)	SLOPE (Inch per foot)	DISTANCE FROM TRAP (feet)
1 1/4	1/4	5
1 1/2	1/4	6
2	1/4	8
3	1/8	12
4	1/8	16

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 inch per foot = 83.3 mm/m.

11. Horizontal wet vents are permitted for up to two bathroom groups located on the same floor level. The wet vents shall serve as the fixture vent, and each fixture shall connect independently to the horizontal wet vent. The horizontal wet vent system is required to connect to a dry-vent terminating to the outdoors. Not more than one wet-vented fixture shall discharge upstream of the dry-vented fixture drain connection. (P3108.1) (P3108.2) (P3108.2.1) Wet vent pipe sizes shall comply with the following table:

TABLE P3108.3
WET VENT SIZE

WET VENT PIPE SIZE (Inches)	FIXTURE UNIT LOAD (d.f.u.)
1 1/2	1
2	4
2 1/2	6
3	12
4	32

For SI: 1 inch = 25.4 mm.

12. Air admittance valves are permitted for individual vents, branch vents, circuit vents, and stack vents for fixtures that are on the same floor level and connect to a horizontal branch drain. They must be installed not less than 4" above the branch or fixture drain being vented, and not less than 6" above insulation in an attic. Permanent access to the air admittance valve is required. The valve must be rated for the size of the vent to which the valve is connected. Each plumbing system requires at least one vent that extends to the outdoors. The air admittance valve cannot serve as the primary or sole vent for a plumbing system, and should only be used when circumstances require their use. (P3114)

13. Standpipe for clothes washer drain shall be no less than 18" but no greater than 42". (IPC802.4)

14. Drilling and Notching of the framing members must meet the guidelines shown in the following figures:

CITY OF COPPERHILL TENNESSEE
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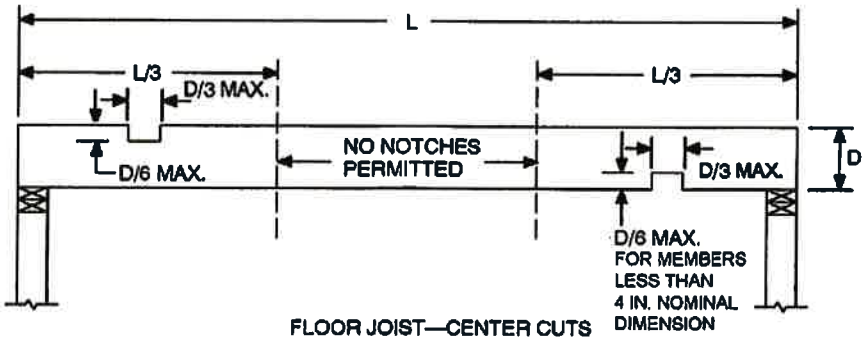
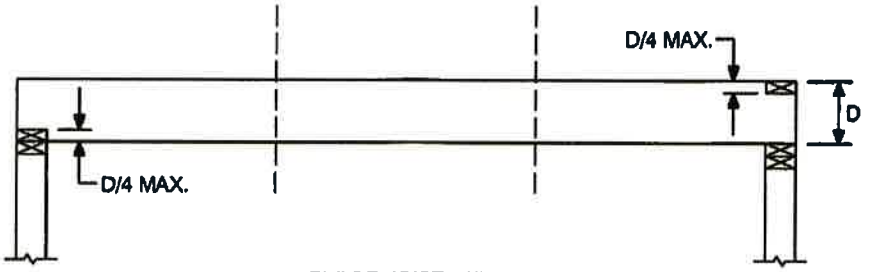
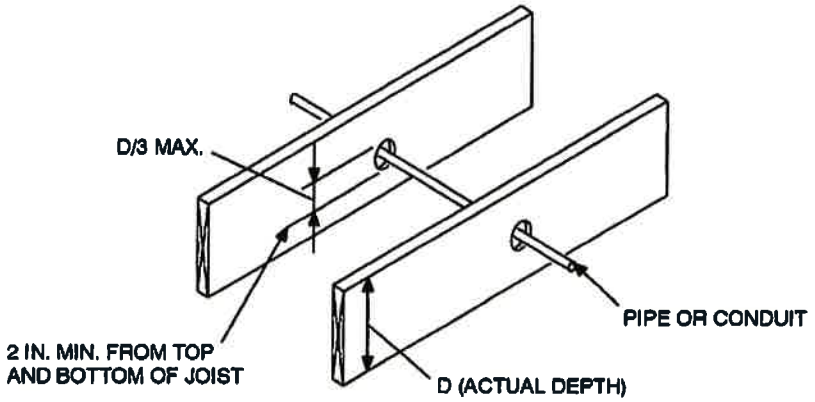
RESIDENTIAL INSPECTION CHECKLIST



FLOOR JOIST—CENTER CUTS



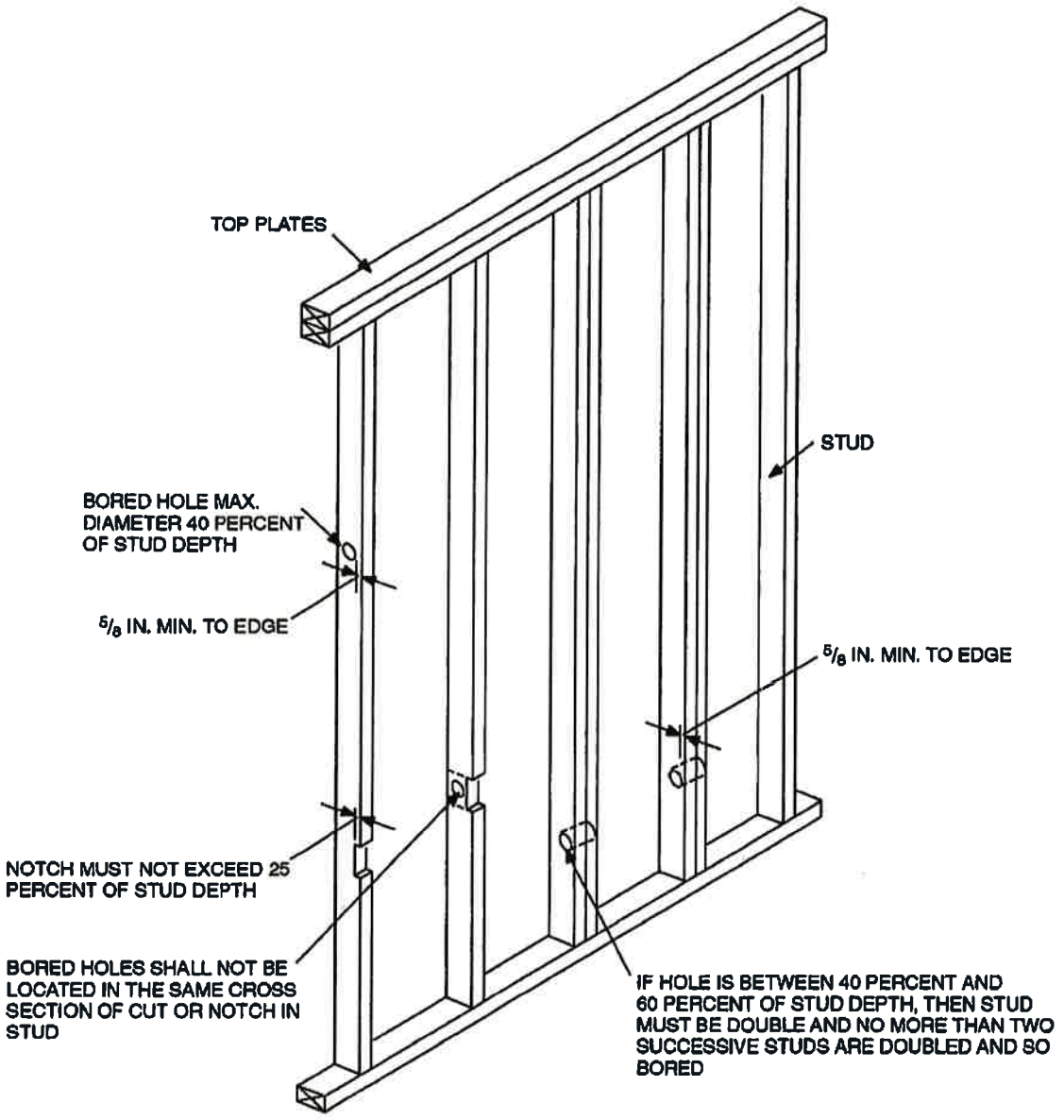
FLOOR JOIST—END CUTS



For SI: 1 inch = 25.4 mm.

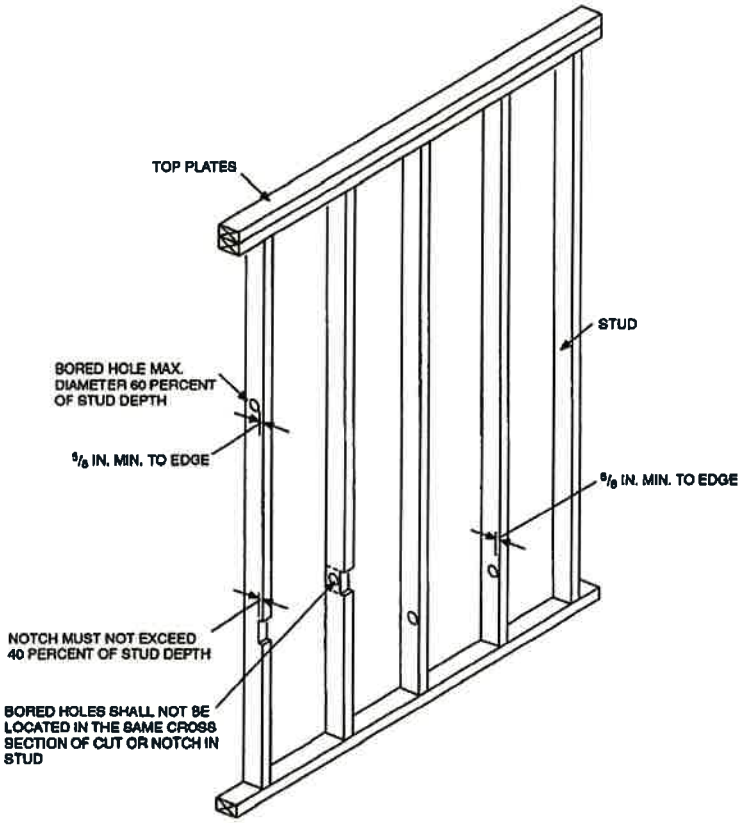
FIGURE R502.8
CUTTING, NOTCHING AND DRILLING

CITY OF COPPERHILL TENNESSEE
BUILDING DEPARTMENT
RESIDENTIAL INSPECTION CHECKLIST



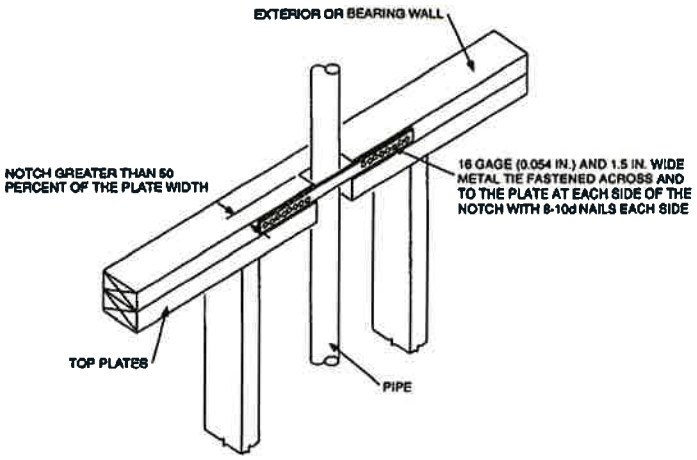
For SI: 1 inch = 25.4 mm.
Note: Condition for exterior and bearing walls.

FIGURE R602.6(1)
NOTCHING AND BORED HOLE LIMITATIONS FOR EXTERIOR WALLS AND BEARING WALLS



For SI: 1 inch = 25.4 mm.

FIGURE R602.6(2)
NOTCHING AND BORED HOLE LIMITATIONS FOR INTERIOR NONBEARING WALLS



For SI: 1 inch = 25.4 mm.

FIGURE R602.6.1
TOP PLATE FRAMING TO ACCOMMODATE PIPING

CITY OF COPPERHILL TENNESSEE
BUILDING DEPARTMENT
RESIDENTIAL INSPECTION CHECKLIST

Water Distribution

1. **Water distribution lines shall be tested at time of Rough-In Inspection with water at operating pressure, or for pipes other than plastic pipe, a 50 psi air test. Air testing of plastic pipe is not allowed. (P2503.2) (P2503.7) This department has contacted ICC for a ruling on air testing PEX, and ICC ruled that it is a plastic pipe and therefore cannot be tested with air.**
2. Pipes are to be protected with shield plates that extend not less than 2" above sole plates and below top plates, when the pipe is located within 1-1/2"of the face of the stud. (P2603.1)
3. Pipes are to be properly supported to ensure alignment, and allow for expansion and contraction. (P2605.1)
4. Water hammer arrestors shall be installed at clothes washers, dishwashers, and ice makers. The water hammer arrestor needs to be installed according to manufacturer's instructions, not exceeding the maximum distance from the outlet served (6' max distance is common, but check manufacturer's instructions). (P2903.5)
5. A shutoff valve is required on each plumbing fixture other than bathtubs and showers in one and two family dwellings. (IPC606.2)
6. For automatic-circulating hot water and heat-traced systems, piping shall be insulated to at least R-2. (IECC403.4)
7. Hot and cold water lines should be separated according to manufacturer's installation instructions to prevent heat exchange and the formation of condensation on the lines.
8. Hose bibs are required to be frost-proof and have vacuum breakers (P2903.10)

Water Heater

1. Water heater must be equipped with an expansion tank. (P2903.4)
2. A shut off valve is required on the cold side of the water heater.
3. Water heater must be installed in a pan when installed in a location where leakage can cause damage to the interior surface. The pan drain must be plumbed to terminate over an approved indirect waste receptor or to the exterior of the building. (P2801.5)
4. Water heaters having an ignition source shall be elevated such that the source of ignition is not less than 18" above the garage floor. **Exception: Elevation of the ignition source is not required for appliances that are listed as flammable vapor ignition resistant.**
5. The temperature and pressure relief valve shall be plumbed to terminate no more than 6" above the floor, drain, or pan.

CITY OF COPPERHILL TENNESSEE
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Please note: This list is not inclusive of all items that may require inspection. Failure to be ready for a requested inspection may result in a re-inspection fee. In a Special Flood Hazard Area, all provisions of the municipal code and Flood-Resistant construction must be followed.

DECKS

GENERAL

1. This document does not apply to decks supporting a hot tub or similar large concentrated load. An engineered drawing will be required in these instances.
2. All decks require a permit except for those that are detached from the dwelling, less than 200 square feet, and less than 30" in height from the ground.
3. All decks shall be constructed of materials resistant to moisture and decay.
4. Lumber shall be No. 2 grade or better
5. Plastic composite deck boards, stair treads, guards or handrails must be stamped in compliance with ASTM D7032 and not exceed the flame spread index of 200 when tested with ASTM E84 or UL 723 and termite resistant in accordance with ASTM D7032
6. All screws, bolts, washers, nuts, and nails for use with preservative treated wood shall be hot-dipped zinc-coated galvanized steel, stainless steel, silicon bronze, or copper.
7. In lieu of the requirements in this document, an engineer's report showing structural equivalency may be submitted for review.
8. Flashing shall be corrosion-resistant metal of nominal thickness not less than 0.019 inch or approved nonmetallic material that is compatible with the substrate of the structure and the decking materials.

FOOTINGS AND POSTS

1. Decks are required to be properly anchored to the ground. Prefabricated deck footings that sit on top of the ground are not permitted to serve as the foundation for a deck.
2. All footings must be a minimum 12" deep. Exact footing size to be determined by the table R507.3.1

   Exception: Free standing decks that meet all of the following criteria:

   - *The joists bear directly on precast concrete pier blocks at grade without support by beams or posts*
   - *The area of the deck does not exceed 200 square feet*
   - *The walking surface is not more than 20 inches above grade at any point within 36 inches measured horizontally from the edge.*

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TABLE R507.3.1
MINIMUM FOOTING SIZE FOR DECKS

LIVE OR GROUND SNOW LOAD[b] (psf)	TRIBUTARY AREA (sq. ft.)	LOAD BEARING VALUE OF SOILS [a, c, d] (psf)											
		1500[e]			2000[e]			2500[e]			≥ 3000[e]		
		Side of a square footing (inches)	Diameter of a round footing (inches)	Thickness (inches)	Side of a square footing (inches)	Diameter of a round footing (inches)	Thickness (inches)	Side of a square footing (inches)	Diameter of a round footing (inches)	Thickness (inches)	Side of a square footing (inches)	Diameter of a round footing (inches)	Thickness (inches)
40	20	12	14	6	12	14	6	12	14	6	12	14	6
	40	14	16	6	12	14	6	12	14	6	12	14	6
	60	17	19	6	15	17	6	13	15	6	12	14	6
	80	20	22	7	17	19	6	15	17	6	14	16	6
	100	22	25	8	19	21	6	17	19	6	15	17	6
	120	24	27	9	21	23	7	19	21	6	17	19	6
	140	26	29	10	22	25	8	20	23	7	18	21	6
	160	28	31	11	24	27	9	21	24	8	20	22	7
50	20	12	14	6	12	14	6	12	14	6	12	14	6
	40	15	17	6	13	15	6	12	14	6	12	14	6
	60	19	21	6	16	18	6	14	16	6	13	15	6
	80	21	24	8	19	21	6	17	19	6	15	17	6
	100	24	27	9	21	23	7	19	21	6	17	19	6
	120	26	30	10	23	26	8	20	23	7	19	21	6
	140	28	32	11	25	28	9	22	25	8	20	23	7
	160	30	34	12	26	30	10	24	27	9	21	24	8
60	20	12	14	6	12	14	6	12	14	6	12	14	6
	40	16	19	6	14	16	6	13	14	6	12	14	6
	60	20	23	7	17	20	6	16	18	6	14	16	6
	80	23	26	9	20	23	7	18	20	6	16	19	6
	100	26	29	10	22	25	8	20	23	7	18	21	6
	120	28	32	11	25	28	9	22	25	8	20	23	7
	140	31	35	12	27	30	10	24	27	9	22	24	8
	160	33	37	13	28	32	11	25	29	10	23	26	9
70	20	12	14	6	12	14	6	12	14	6	12	14	6
	40	18	20	6	15	17	6	14	15	6	12	14	6
	60	21	24	8	19	21	6	17	19	6	15	17	6
	80	25	28	9	21	24	8	19	22	7	18	20	6
	100	28	31	11	24	27	9	21	24	8	20	22	7
	120	30	34	12	26	30	10	24	27	9	21	24	8
	140	33	37	13	28	32	11	25	29	10	23	26	9
	160	35	40	15	30	34	12	27	31	11	25	28	9

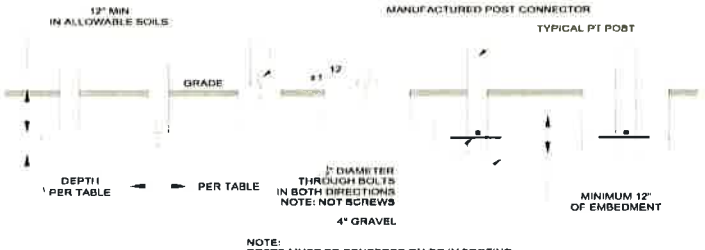
For SI: 1 inch = 25.4 mm, 1 square foot = 0.0929 m², 1 pound per square foot = 0.0479 kPa.
a. Interpolation permitted, extrapolation not permitted.
b. Based on highest load case: Dead + Live or Dead + Snow.
c. Assumes minimum square footing to be 12 inches x 12 inches x 6 inches for 6 x 6 post.
d. If the support is a brick or CMU pier, the footing shall have a minimum 2-inch projection on all sides.
e. Area, in square feet, of deck surface supported by post and footings.

1. **Single-level deck post sizing**: Sizing is based on height shown in Table R507.4. No deck shall exceed a height of 14' without an engineered design.

TABLE R507.4
DECK POST HEIGHT[a]

DECK POST SIZE	MAXIMUM HEIGHT[a,b] (feet-inches)
4 × 4	6-9[c]
4 × 6	8
6 × 6	14
8 × 8	14

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm,
1 pound per square foot = 0.0479 kPa.
a. Measured to the underside of the beam.
b. Based on 40 psf live load.
c. The maximum permitted height is 8 feet for one-ply and two-ply beams. The maximum permitted height for three-ply beams on post cap is 6 feet 9 inches.



NOTE:
POSTS MUST BE CENTERED ON OR IN FOOTING

For SI: 1 inch = 25.4 mm.

FIGURE R507.3
DECK POSTS TO DECK FOOTING CONNECTION

CITY OF COPPERHILL TENNESSEE
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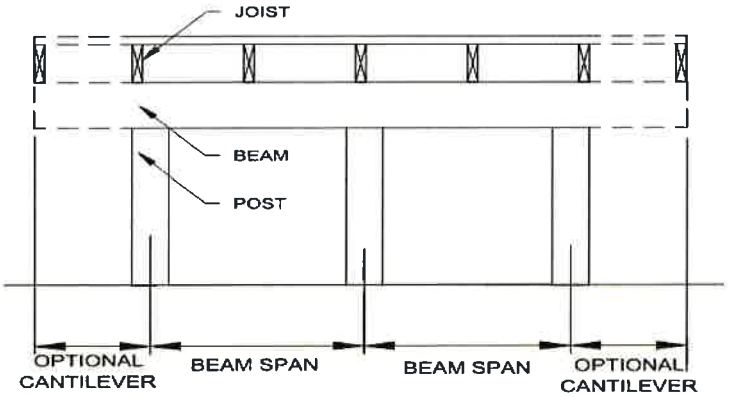
Deck Beams

1. **Deck Beam Spans:** Decks with beams shall use Table R507.5 for sizing the beam properly:

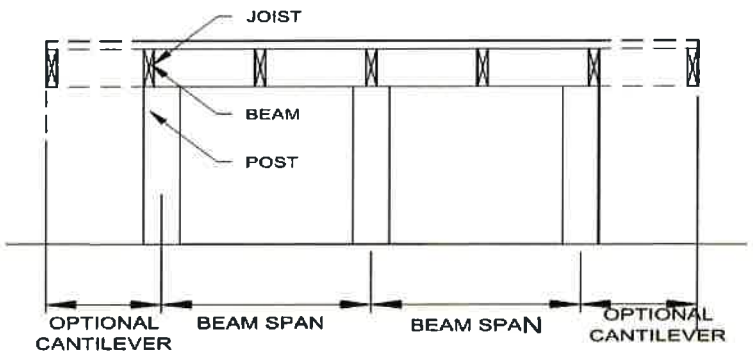
TABLE R507.5
DECK BEAM SPAN LENGTHS[a, b, g] (feet - Inches)

SPECIES[c]	SIZE[d]	DECK JOIST SPAN LESS THAN OR EQUAL TO: (feet)						
		6	8	10	12	14	16	18
Southern pine	1 – 2 × 6	4-11	4-0	3-7	3-3	3-0	2-10	2-8
	1 – 2 × 8	5-11	5-1	4-7	4-2	2-10	3-7	3-5
	1 – 2 × 10	7-0	6-0	5-5	4-11	4-7	4-3	4-0
	1 – 2 × 12	8-3	7-1	6-4	5-10	5-5	5-0	4-9
	2 – 2 × 6	6-11	5-11	5-4	4-10	4-6	4-3	4-0
	2 – 2 × 8	8-9	7-7	6-9	6-2	5-9	5-4	5-0
	2 – 2 × 10	10-4	9-0	8-0	7-4	6-9	6-4	6-0
	2 – 2 × 12	12-2	10-7	9-5	8-7	8-0	7-6	7-0
	3 – 2 × 6	8-2	7-5	6-8	6-1	5-8	5-3	5-0
	3 – 2 × 8	10-10	9-6	8-6	7-9	7-2	6-8	6-4
	3 – 2 × 10	13-0	11-3	10-0	9-2	8-6	7-11	7-6
	3 – 2 × 12	15-3	13-3	11-10	10-9	10-0	9-4	8-10
'ouglas fir-larch[e], em-fir[e], spruce-pine-fir[e], redwood, western cedars, ponderosa pine[f], red pine[f]	3 × 6 or 2 – 2 × 6	5-5	4-8	4-2	3-10	3-6	3-1	2-9
	3 × 8 or 2 – 2 × 8	6-10	5-11	5-4	4-10	4-6	4-1	3-8
	3 × 10 or 2 – 2 × 10	8-4	7-3	6-6	5-11	5-6	5-1	4-8
	3 × 12 or 2 – 2 × 12	9-8	8-5	7-6	6-10	6-4	5-11	5-7
	4 × 6	6-5	5-6	4-11	4-6	4-2	3-11	3-8
	4 × 8	8-5	7-3	6-6	5-11	5-6	5-2	4-10
	4 × 10	9-11	8-7	7-8	7-0	6-6	6-1	5-8
	4 × 12	11-5	9-11	8-10	8-1	7-6	7-0	6-7
	3 – 2 × 6	7-4	6-8	6-0	5-6	5-1	4-9	4-6
	3 – 2 × 8	9-8	8-6	7-7	6-11	6-5	6-0	5-8
	3 – 2 × 10	12-0	10-5	9-4	8-6	7-10	7-4	6-11
	3 – 2 × 12	13-11	12-1	10-9	9-10	9-1	8-6	8-1

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 pound per square foot = 0.0479 kPa, 1 pound = 0.454 kg.
a. Ground snow load, live load = 40 psf, dead load = 10 psf, L/Δ = 360 at main span, L/Δ = 180 at cantilever with a 220-pound point load applied at the end.
b. Beams supporting deck joists from one side only.
c. No. 2 grade, wet service factor.
d. Beam depth shall be greater than or equal to depth of joists with a flush beam condition.
e. Includes incising factor.
f. Northern species. Incising factor not included.
g. Beam cantilevers are limited to the adjacent beam's span divided by 4



DROPPED BEAM

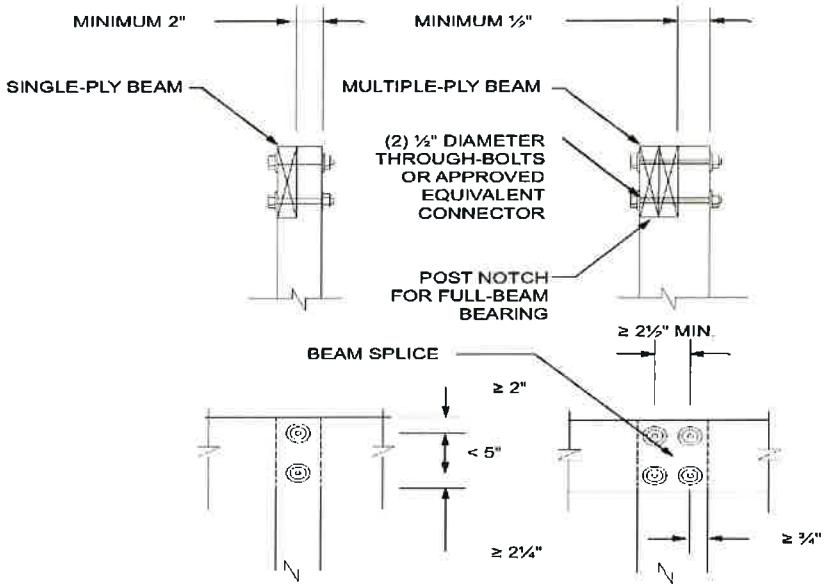


FLUSH BEAM

FIGURE R507.5
TYPICAL DECK JOIST SPANS

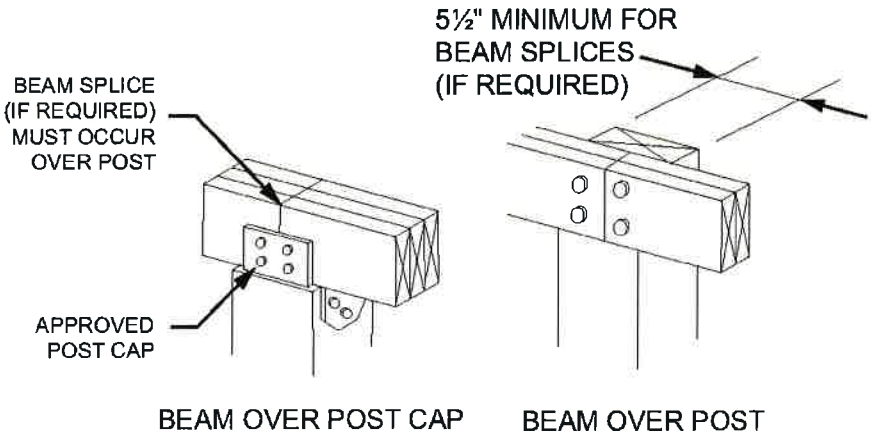
CITY OF COPPERHILL TENNESSEE
BUILDING DEPARTMENT
RESIDENTIAL INSPECTION CHECKLIST

2. **Deck Beam Bearing:** Deck beams must bear no less than 1 ½ inches of bearing on wood or metal and not less than 3 inches on concrete or masonry for the entire width of the beam. When there are multiple span beams bearing on intermediate posts each ply must have full bearing on the post matching figure 507.5.1 (1) and R507.5.1 (2)



For SI: 1 inch = 25.4 mm.

FIGURE R507.5.1(2)
NOTCHED POST-TO-BEAM CONNECTION



For SI: 1 inch = 25.4 mm.

FIGURE R507.5.1(1)
DECK BEAM TO DECK POST

3 **Deck Beam Support:** Deck beams shall be attached to supports in a manner capable of transferring vertical loads and resisting horizonal displacement. Manufactured post-to-beam connectors shall be sized for the post and beam sizes. Bolts shall have washers under the head and nut

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Deck Joists

1. **Deck Joist Span:** The maximum allowable spans for wood deck joists are shown in Figure R507.6 and shall be in accordance with Table R507.6.

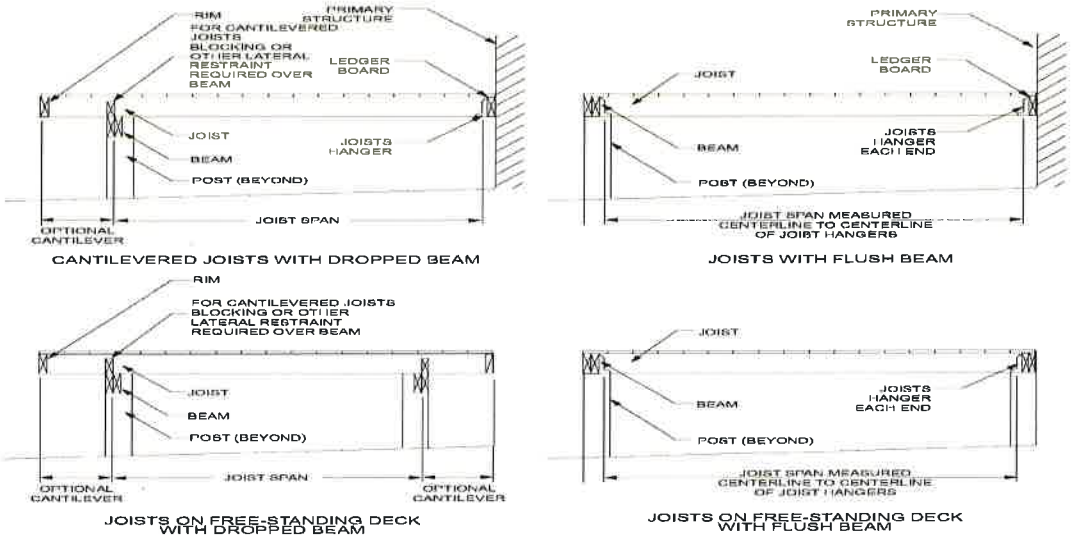

FIGURE R507.6
TYPICAL DECK JOIST SPANS

2. **Deck Joist Cantilevering:** The maximum allowable joist cantilever shall be limited to one-fourth (1/4) of the joist span or a maximum cantilever length specified in Table R507.6, whichever is less.

TABLE R507.6
DECK JOIST SPANS FOR COMMON LUMBER SPECIES (ft. - in.)

SPECIES[a]	SIZE	ALLOWABLE JOIST SPAN[b]			MAXIMUM CANTILEVER[c, f]		
		SPACING OF DECK JOISTS (Inches)			SPACING OF DECK JOISTS WITH CANTILEVERS[c] (Inches)		
		12	16	24	12	16	24
Southern pine	2 × 6	9-11	9-0	7-7	1-3	1-4	1-6
	2 × 8	13-1	11-10	9-8	2-1	2-3	2-5
	2 × 10	16-2	14-0	11-5	3-4	3-6	2-10
	2 × 12	18-0	16-6	13-6	4-6	4-2	3-4
Douglas fir-larch[d], hem-fir[d] spruce-pine-fir[d],	2 × 6	9-6	8-8	7-2	1-2	1-3	1-5
	2 × 8	12-6	11-1	9-1	1-11	2-1	2-3
	2 × 10	15-8	13-7	11-1	3-1	3-5	2-9
	2 × 12	18-0	15-9	12-10	4-6	3-11	3-3
Redwood, western cedars, ponderosa pine[e], red pine[e]	2 × 6	8-10	8-0	7-0	1-0	1-1	1-2
	2 × 8	11-8	10-7	8-8	1-8	1-10	2-0
	2 × 10	14-11	13-0	10-7	2-8	2-10	2-8
	2 × 12	17-5	15-1	12-4	3-10	3-9	3-1

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 pound per square foot = 0.0479 kPa, 1 pound = 0.454 kg.
No. 2 grade with wet service factor.
Ground snow load, live load = 40 psf, dead load = 10 psf, L/Δ = 360.
.. Ground snow load, live load = 40 psf, dead load = 10 psf, L/Δ = 360 at main span, L/Δ = 180 at cantilever with a 220-pound point load applied to end.
d. Includes incising factor.
e. Northern species with no incising factor.
f. Cantilevered spans not exceeding the nominal depth of the joist are permitted.

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3. **Deck Joist Spacing:** The maximum joist spacing shall be limited by the decking materials in accordance with Table R507.7

TABLE R507.7
MAXIMUM JOIST SPACING FOR DECKING

DECKING MATERIAL TYPE AND NOMINAL SIZE	MAXIMUM ON-CENTER JOIST SPACING	
	Decking perpendicular to joist	Decking diagonal to joist[a]
$1^1/_4$-inch-thick wood	16 inches	12 inches
2-inch-thick wood	24 inches	16 inches
Plastic composite	In accordance with Section R507.2	In accordance with Section R507.2

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 degree = 0.01745 rad.
a. Maximum angle of 45 degrees from perpendicular for wood deck boards.

4. **Deck Joist Bearing:** Deck joist bearing shall have no less than 1 ½ inches on wood or metal and no less than 3" on Concrete or masonry.
5. **Deck Joist Connection:** Joists bearing on top of a multiple-ply beam or ledger shall be fastened in accordance with Table R602.3(1). Joists bearing on top of a single-ply beam or ledger shall be attached by a mechanical connector. Joist framing into the side of a beam or ledger board shall be supported by approved joist hangers.

Deck Ledgers and Attachment to House

1. **Deck Ledgers Details:** Deck ledgers shall be a minimum 2-inch by 8-inch nominal, pressure-preservative treated southern pine, incised pressure-preservative treated hem-fir, or approved, naturally durable, No. 2 grade or better lumber. Deck ledgers shall not support concentrated loads from beams or girders. Deck ledgers shall not be supported on store or masonry veneer.
2. **Band Joist Details:** Band joists supporting a ledger shall be a minimum 2-inch nominal solid sawn spruce pine fir or better lumber or a minimum 1 inch by 9 ½ inch dimensional Douglas fir or better laminated veneer lumber. Band joists must bear fully on the primary structure capable of supporting all required loads.
3. **Ledgers to Band Joist Details (Bolts and Lag Screws):** Fasteners used in deck ledger connections in accordance with Table R507.9.1.3(1) shall be hot-dipped galvanized or stainless steel and shall be installed in accordance with Table R507.9.1.3(2) and Figures R507.9.1.3(1) and R507.9.1.3(2)

TABLE R507.9.1.3(1)
DECK LEDGER CONNECTION TO BAND JOIST[a, b]
(Deck live load = 40 psf, deck dead load = 10 psf, snow load ≤ 40 psf)

CONNECTION DETAILS	JOIST SPAN						
	6′ and less	6′1″ to 8′	8′1″ to 10′	10′1″ to 12′	12′1″ to 14′	14′1″ to 16′	16′1″ to 18′
	On-center spacing of fasteners						
$^1/_2$-inch diameter lag screw with $^1/_2$-inch maximum sheathing[c, d]	30	23	18	15	13	11	10
$^1/_2$-inch diameter bolt with $^1/_2$-inch maximum sheathing[d]	36	36	34	29	24	21	19
$^1/_2$-inch diameter bolt with 1-inch maximum sheathing[e]	36	36	29	24	21	18	16

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 pound per square foot = 0.0479 kPa.
a. Ledgers shall be flashed in accordance with Section R703.4 to prevent water from contacting the house band joist.
b. Snow load shall not be assumed to act concurrently with live load.
c. The tip of the lag screw shall fully extend beyond the inside face of the band joist.
d. Sheathing shall be wood structural panel or solid sawn lumber.
e. Sheathing shall be permitted to be wood structural panel, gypsum board, fiberboard, lumber or foam sheathing. Up to $^1/_2$-inch thickness of stacked washers shall be permitted to substitute for up to $^1/_2$ inch of allowable sheathing thickness where combined with wood structural panel or lumber sheathing.

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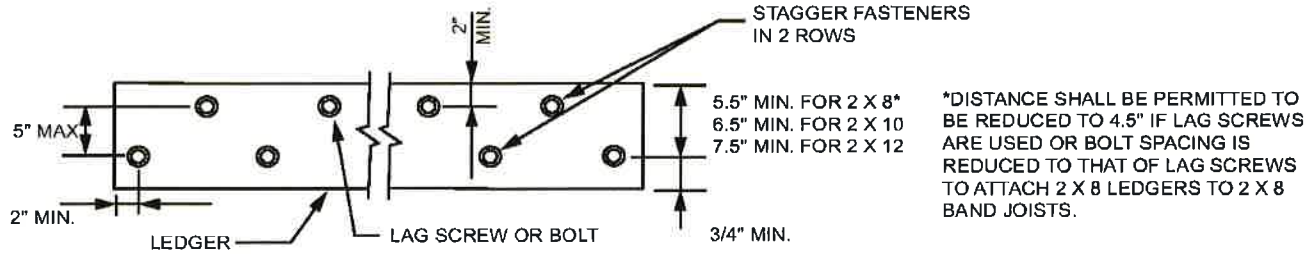
4. **Ledgers to Band Joist Details:** Fasteners used in deck ledger connections in accordance with Table R507.9.1.3(1) shall be hot-dipped galvanized or stainless steel and shall be installed in accordance with Table R507.9.1.3(2) and Figures R507.9.1.3(1) and R507.9.1.3(2)

TABLE R507.9.1.3(2)
PLACEMENT OF LAG SCREWS AND BOLTS IN DECK LEDGERS AND BAND JOISTS

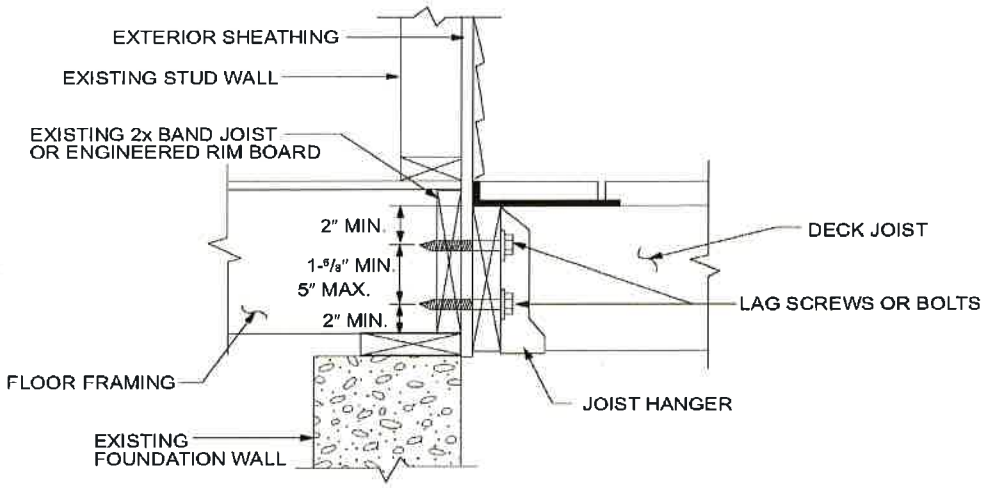
MINIMUM END AND EDGE DISTANCES AND SPACING BETWEEN ROWS				
	TOP EDGE	BOTTOM EDGE	ENDS	ROW SPACING
Ledger[a]	2 inches[d]	$^3/_4$ inch	2 inches[b]	$1^5/_8$ inches[b]
Band Joist[c]	$^3/_4$ inch	2 inches	2 inches[b]	$1^5/_8$ inches[b]

For SI: 1 inch = 25.4 mm.
a. Lag screws or bolts shall be staggered from the top to the bottom along the horizontal run of the deck ledger in accordance with Figure R507.9.1.3(1).
b. Maximum 5 inches.
c. For engineered rim joists, the manufacturer's recommendations shall govern.
d. The minimum distance from bottom row of lag screws or bolts to the top edge of the ledger shall be in accordance with **Figure** R507.9.1.3(1).



For SI: 1 inch = 25.4 mm.

FIGURE R507.9.1.3(1)
PLACEMENT OF LAG SCREWS AND BOLTS IN LEDGERS



For SI: 1 inch = 25.4 mm.

FIGURE R507.9.1.3(2)
PLACEMENT OF LAG SCREWS AND BOLTS IN BAND JOISTS

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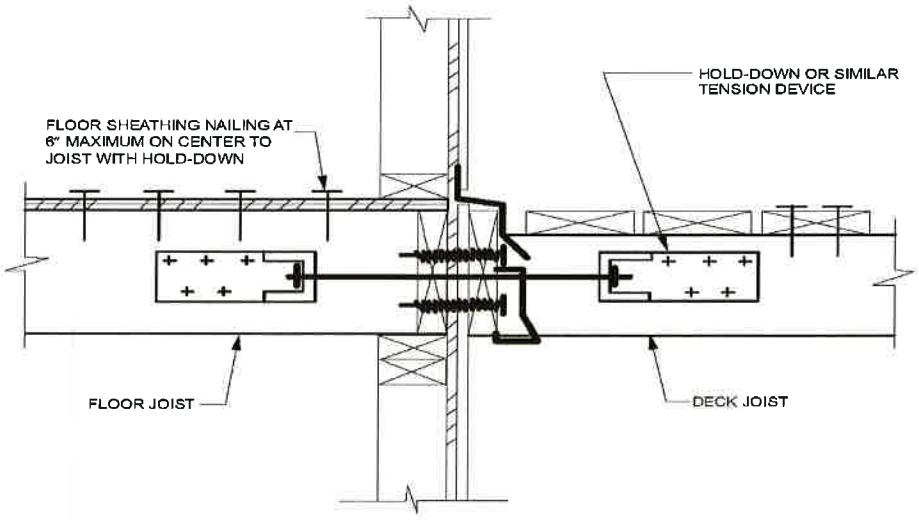
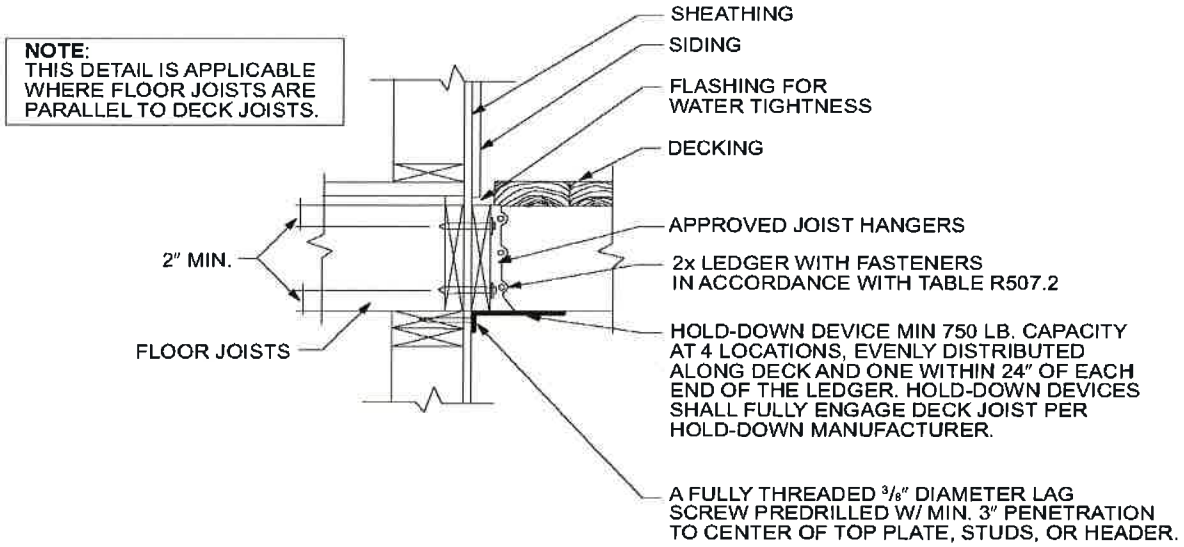
5. **Lateral Connections:** Lateral loads shall be transferred to the ground or to a structure capable of transmitting them to the ground. Where the lateral load connection is provided in accordance with Figure R507.9.2(1), hold down tension devices shall be installed in not less than two locations per deck within 24 inches of each end of the deck. Each device shall have an allowance stress design capacity of not less than 1,500 pounds. Where the lateral location connections are provided in accordance with figure R507.9.2(2), the hold down tension devices shall be installed in not less than four locations per deck, and each device shall have an allowable stress deigns capacity of not less than 750 pounds.



For SI: 1 inch = 25.4 mm.

FIGURE R507.9.2(1)
DECK ATTACHMENT FOR LATERAL LOADS



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

FIGURE R507.9.2(2)
DECK ATTACHMENT FOR LATERAL LOADS

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Please note: This list is not inclusive of all items that may require inspection. Failure to be ready for a requested inspection may result in a re-inspection fee. In a Special Flood Hazard Area, all provisions of the municipal code and Flood-Resistant construction must be followed.

FRAMING

CRAWLSPACE/UNDER FLOOR/SLAB CONNECTIONS

1. Anchor bolting is properly installed and at a minimum of 2 per plate, spaced maximum 6' o.c. (4' o.c. max if the building is over 2 stories above grade plane in height) and a maximum 12" from plate ends, or an approved alternative fastener is installed per manufacturer's installation instructions or per engineered specifications. (R403.1.6)
2. Anchor bolts (minimum ½") shall be embedded a minimum 7 inches into concrete or fully grouted cell of concrete masonry unit. Masonry cell shall be grouted a minimum of one block course deep. Installation in grout key or mortar joint is not permitted. (R403.1.6)
3. If approved foundation straps are installed in lieu of anchor bolting, they must meet the installation requirements of the manufacturer. Manufacturer required spacing is usually not the same as the required anchor bolt spacing, so special attention is required to ensure that this code requirement is being fulfilled. (R403.1.6)
4. In townhomes, plate washers minimum 3"x3"x1/4" installed at pressure treated plates between the foundation sill plate and the nut, except where approved anchor straps are used. (R602.11.1) & (R403.1.6.1)
5. ***Note: Walls separating townhome units shall be anchored in the same manner as the exterior walls in accordance with the above provisions.**
6. All fasteners and connectors in contact with preservative treated and fire-retardant treated wood shall be of the appropriate material (hot dipped, zinc-coated galvanized steel, stainless steel, silicon bronze,or copper). (R317.3)
7. Dimensional joist bearing to be minimum 3" on concrete or masonry and 1 ½" on wood or metal. (R502.6)
8. All metal hangers/fasteners are installed where required.
9. Girder end joints occur over supports. Shimming of girders at pier connections is not allowed. Any blocking must be the full width of pier below.(R502.6)
10. Crawl space shall be vented at a rate of 1 square foot of opening for each 150 feet of under-floor space, with an opening within 3' of each corner. The minimum net area of ventilation may be reduced to 1/1,500 of the under-floor area where the ground surface is covered with an approved Class 1 vapor retarder material and the required openings

are placed to provide cross ventilation of the space. One such opening shall be within 3' of each corner of the building. (R408.1 & R408.2)

11. Minimum floor crawl access opening 18"x24". Minimum wall access openings shall be not less than 16"x24". If any appliance located in the crawlspace is larger than this size, then the access opening must be at least large enough to remove the largest appliance. (R408.4)
12. Foundation plates, sills, and sleepers on concrete, which are in direct contact with the earth, are to be treated wood or wood of natural resistance to decay. (R317.1)

ABOVE FLOOR FRAMING

General

1. Roof is complete and exterior moisture barriers are installed (R109.4 & R703.1)
   The installation of plumbing, mechanical, electrical or fire sprinkler system rough-in work has not damaged the wall framing, floor joists, or roof framing. (R502.8 & R602.8)
3. Plumbing openings through the building envelope have been sealed with caulking, foam or closed gasketing system. (P2606.1)
4. Attic access is provided to areas exceeding 30 s.f. and a vertical height of 30" or greater. The rough framed opening is a minimum of 22" x 30" with a minimum 30" of unobstructed headroom above the access. When appliances located in the attic require a larger opening than this to be removed, the smallest allowable dimension for the access shall accommodate the removal of the largest appliance installed. (R807.1)

Windows and Glazing

1. Tempered glazing is installed at all the required areas/hazardous locations, including but not limited to: adjacent to stairways and stair landings, adjacent to showers, and adjacent to bath tubs. Glazing adjacent to the landing at the bottom of a stairway that is less than 36" above the landing and within 60" horizontally of the bottom tread is considered a hazardous location and must be tempered. (R308.4.7) (R308.5)
2. Glazing in an individual fixed or operable panel adjacent to a door where the nearest vertical edge of the door in a closed position and where the bottom exposed edge of the glazing is less than 60" above the floor or walking surface shall be tempered. (R308.4.2)

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3. Sill heights at emergency escape and rescue openings are framed to allow 44" maximum distance from finished floor to finished window sill. (R310.1)
4. All emergency escape and rescue openings shall have a minimum net clear opening of 5.7 s.f., or 5 s.f. if a grade floor opening. The minimum clear opening height shall be 24" and the minimum clear opening width shall be 20". (R310.1.1, R310.1.2, and R310.1.3)
5. In dwelling units where the opening of an operable window is located more than 72" above the finished grade or surface below, the lowest part of the clear opening of the window shall be a minimum of 24" above the finished floor, unless equipped with appropriate fall protection devices. Approved window opening control devices are allowed on emergency escape and rescue openings, provided they meet the appropriate criteria. (R312.2.1 & R312.2.2)

Stairs

1. Floor or 36" deep landing required at top and bottom of stairways. Exception: Not required at the top of an interior flight of stairs, as long as the door does not swing over the stairs. (R311.7.6)
2. Stairway headroom clearance is 6'-8" measured vertically from the plane of the stairway tread, nosing, landings and platforms to the soffit or other construction above at all points. (R311.7.2)
3. Minimum tread depth is 10", and maximum riser height shall be 7 ¾". (R311.7)

Walls

1. Sheathing is nailed per the shear wall/braced wall panel schedule appropriate for the material in accordance with manufacturer's instructions, or at 6" max around the perimeter and 12" intermediate field nailed when using conventional wood structural panels. (R604.3)
2. Sheathing edges and end joints must be blocked, or occur over horizontal or vertical framing members, unless engineered specifications state otherwise. If there is a visible sheathing joint inside the building, then the sheathing is not properly installed.
3. Fasteners at end joints are not spaced greater than 6" on center and are firmly driven into the framing.
4. When top plate is drilled or notched by more than 50% of its width, a galvanized metal tie not less than .054" thick and 1 ½" wide shall be fastened across and to the plate at each side of the opening. It must extend 6" past the opening. Exception: When the entire side of the wall with the notch or cut is covered by wood structural panel sheathing. (R602.6.1)

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5. Provide/verify header to king stud attachment and connection requirements in accordance with R603.7 and Tables R603.7 (1) and R603.7 (2).
6. Verify typical outside/inside corners and garage door corners are in accordance with Figure R602.10.4. Corners adjacent to garage doors must be a minimum 24" wide (taller for larger garage door heights) from opening to outside corner to provide proper shear wall strength.

Roof

1. The rafters are framed opposite each other at the ridges. (R802.3)
2. Notches on the ends of rafters don't exceed ¼ the nominal joist depth. (R802.7.1) & (R802.7.1.1)
3. Notches in the top or bottom of rafters don't exceed 1/6 of the nominal depth and are not located in the middle 1/3 of the span. (R802.7.1) & (R802.7.1.1)
4. Holes are not within 2" of the top or bottom of the rafter and the diameter is not greater than 1/3 the nominal depth. For I-joists, refer to manufacturer's specifications. (R802.7.1) & (R502.8.1)
5. Collar ties minimum every 4' and rafter ties (where are required) are completed. Rafters are attached to resist uplift forces as required (R802.4.6)
6. Purlins and struts are installed as required. (R802.5.1(1))
7. Taper cuts at end of ceiling joist do not exceed ¼ the depth of the member. (R802.7.1.2)

Trusses

1. The truss specifications have been designed by an engineer and provided to the inspector. (R106.1)
2. The trusses have been installed as designed, and not modified or altered in any. (R802.10.4)
3. The trusses are braced and attached to resist uplift forces as required. (R802.10.3, R802.11.1.2)

Drilling and Notching

Drilling and Notching of the framing members must meet the guidelines shown in the following figures:

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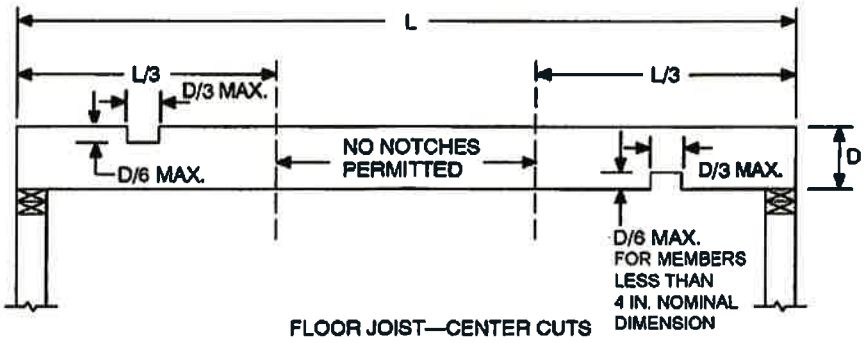
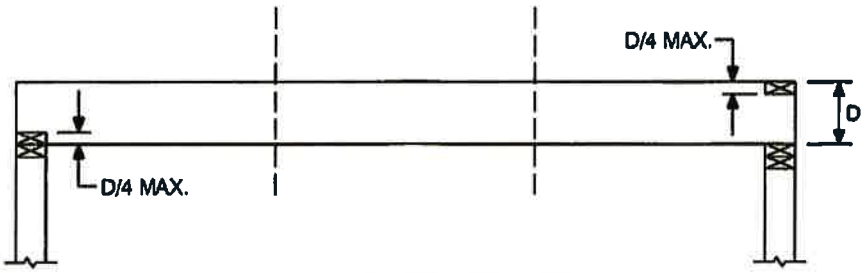
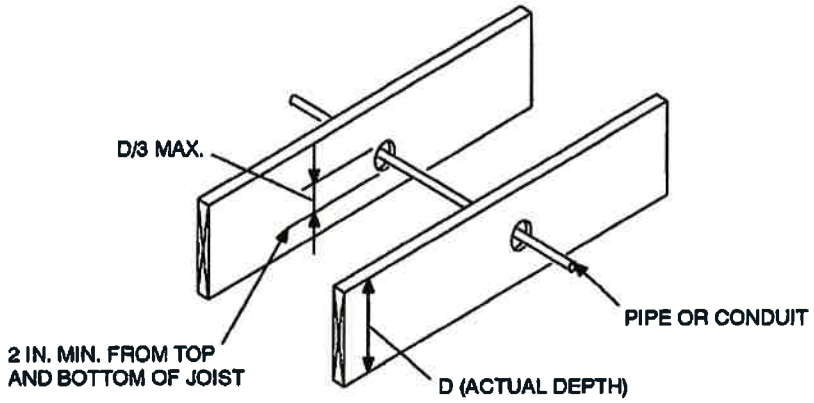


FLOOR JOIST—CENTER CUTS



FLOOR JOIST—END CUTS



For SI: 1 inch = 25.4 mm.

FIGURE R502.8
CUTTING, NOTCHING AND DRILLING

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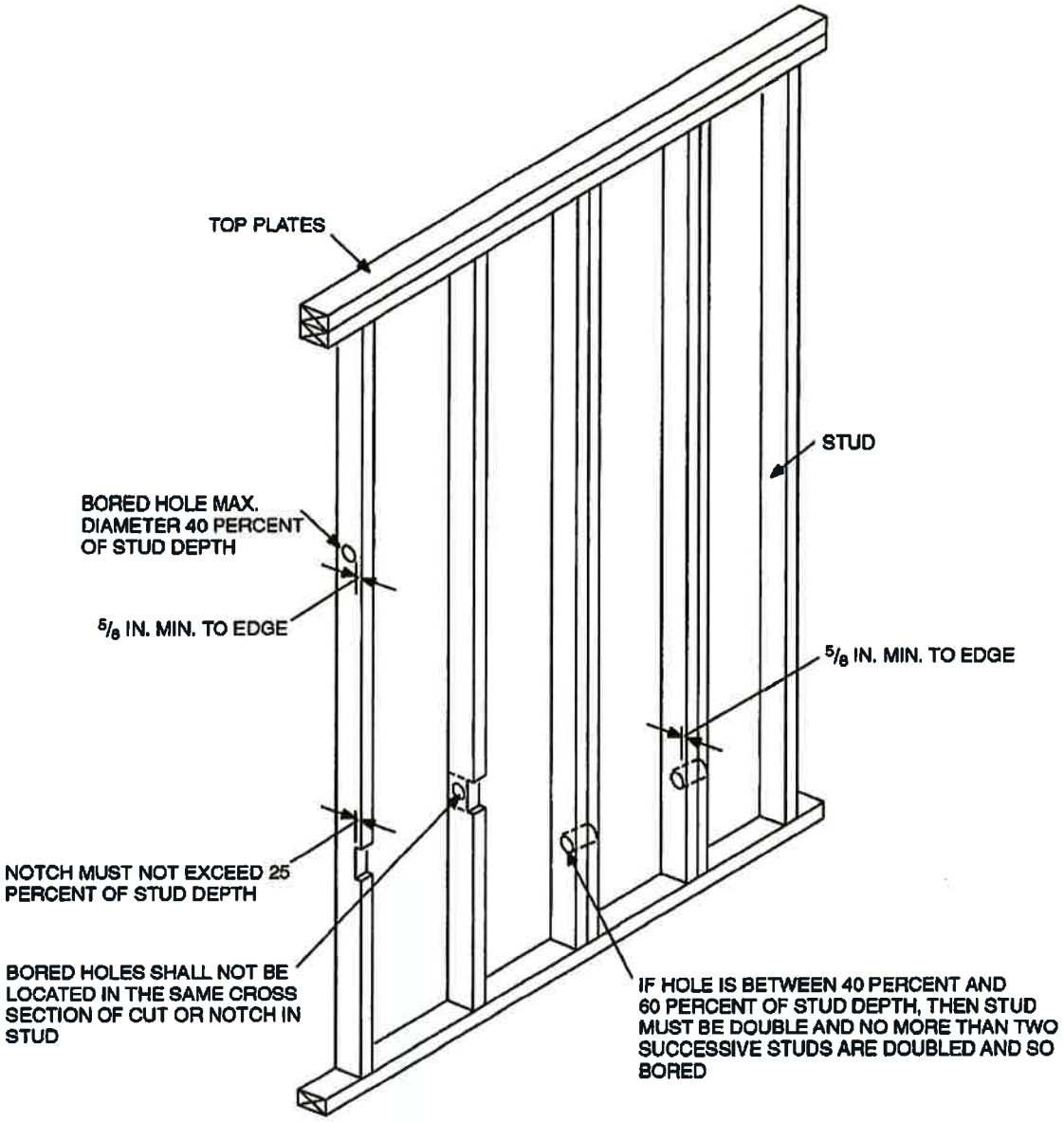
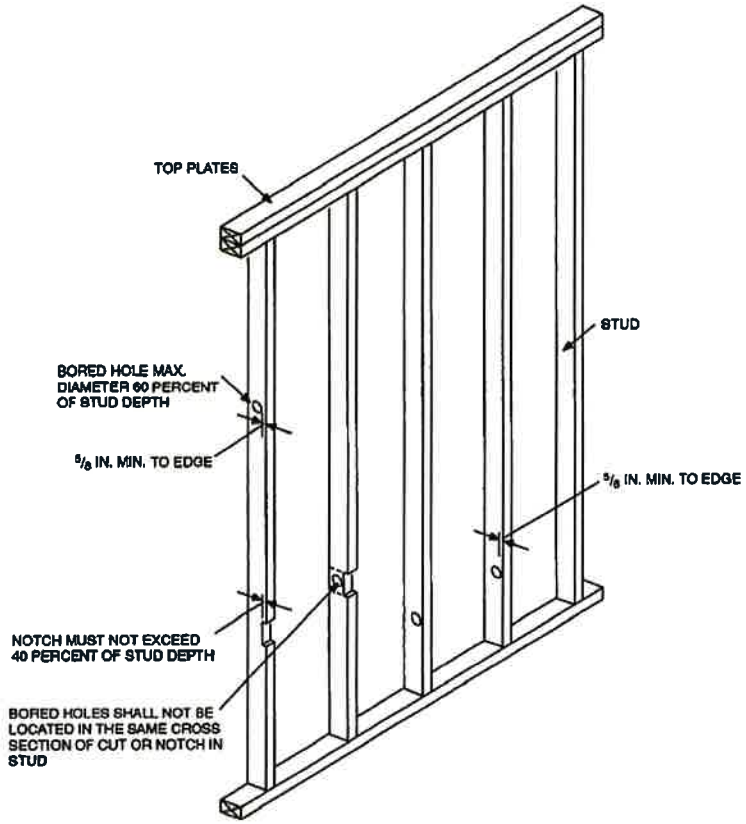


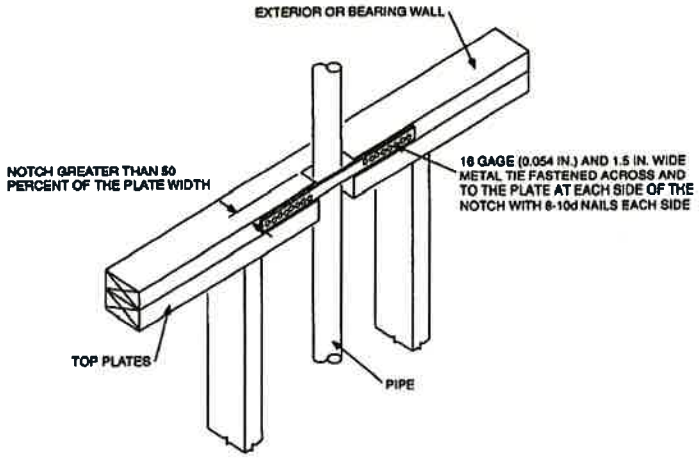
For SI: 1 inch = 25.4 mm.
Note: Condition for exterior and bearing walls.

FIGURE R602.6(1)
NOTCHING AND BORED HOLE LIMITATIONS FOR EXTERIOR WALLS AND BEARING WALLS



For SI: 1 inch = 25.4 mm.

FIGURE R602.6(2)
NOTCHING AND BORED HOLE LIMITATIONS FOR INTERIOR NONBEARING WALLS



For SI: 1 inch = 25.4 mm.

FIGURE R602.6.1
TOP PLATE FRAMING TO ACCOMMODATE PIPING

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Please note: This list is not inclusive of all items that may require inspection. Failure to be ready for a requested inspection may result in a re-inspection fee. In a Special Flood Hazard Area, all provisions of the municipal code and Flood-Resistant construction must be followed.

FOUNDATION WALLS:

1. All plumbing through foundation walls must be sleeved two pipe sizes larger than the pipe that will pass through it. (IRC P2603.4)
2. Footings shall project beyond the face of the foundation wall at least 2 inches, but not more than the thickness of the footing. (IRC R403.1.1)
3. Top of the wall will project a minimum of 6" above finished grade, 4" where masonry veneer is installed. (R404.1.6)
4. Foundation anchorage that must be embedded in foundation wall prior to wall framing above must be installed and visible. Sill/sole plate shall not be installed at this time so proper embedment can be inspected. The foundation wall inspection is to verify embedment only – **see Framing Inspection Checklist** for proper installation instructions and spacing of all foundation anchorage. Anchorage will be inspected again at the framing inspection to ensure that all requirements have been met.
5. Anchor bolts (minimum ½") shall be embedded a minimum 7 inches into concrete or fully grouted cell of concrete masonry unit. Masonry cell shall be grouted a minimum of one block course deep. Installation in grout key or mortar joint is not permitted. (R403.1.6)
6. Crawlspace openings shall be provided for as required. **See Framing Inspection Checklist** for ventilation requirements.
7. Waterproofing/dampproofing of foundation exterior walls required. (R406.1, R406.2)
8. Engineered foundation walls shall have design criteria available for inspector prior to or at time of inspection.

***The following requirements apply to all foundation walls that are not engineered and are over 4' in height. These include concrete block and poured concrete walls. These charts specify when reinforcement is required, and the specifications for reinforcement placement. The depth of the unbalanced backfill refers to the amount of soil that will be against the foundation walls below grade, and must be known to determine what level of reinforcement is required.**

For **concrete block** foundation walls over 4' in height, the following table shall be used to determine the required width of walls **without** reinforcement. For soil type, assume the middle column of soil classes, unless a soils test is required and shows otherwise:

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(Diagram for reference of terms)

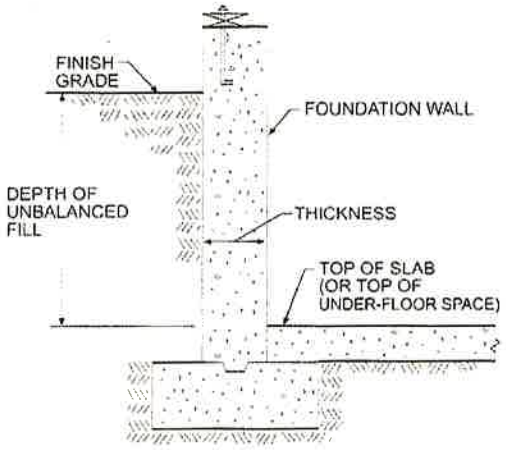

Figure R404.1.1
FOUNDATION WALL WITH UNBALANCED FILL

TABLE R404.1.1(1)
PLAIN MASONRY FOUNDATION WALLS

MAXIMUM WALL HEIGHT (feet)	MAXIMUM UNBALANCED BACKFILL HEIGHT[c] (feet)	PLAIN MASONRY[a] MINIMUM NOMINAL WALL THICKNESS (Inches)		
		Soil classes[b]		
		GW, GP, SW and SP	GM, GC, SM, SM-SC and ML	SC, MH, ML-CL and inorganic CL
5	4	6 solid[d] or 8	6 solid[d] or 8	6 solid[d] or 8
	5	6 solid[d] or 8	8	10
6	4	6 solid[d] or 8	6 solid[d] or 8	6 solid[d] or 8
	5	6 solid[d] or 8	8	10
	6	8	10	12
7	4	6 solid[d] or 8	8	8
	5	6 solid[d] or 8	10	10
	6	10	12	10 solid[d]
	7	12	10 solid[d]	12 solid[d]
8	4	6 solid[d] or 8	6 solid[d] or 8	8
	5	6 solid[d] or 8	10	12
	6	10	12	12 solid[d]
	7	12	12 solid[d]	Footnote e
	8	10 solid[d]	12 solid[d]	Footnote e
9	4	6 solid[d] or 8	6 solid[d] or 8	8
	5	8	10	12
	6	10	12	12 solid[d]
	7	12	12 solid[d]	Footnote e
	8	12 solid[d]	Footnote e	Footnote e
	9	Footnote e	Footnote e	Footnote e

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 pound per square inch = 6.895 Pa.

a. Mortar shall be Type M or S and masonry shall be laid in running bond. Ungrouted hollow masonry units are permitted except where otherwise indicated.

b. Soil classes are in accordance with the Unified Soil Classification System. Refer to Table R405.1.

c. Unbalanced backfill height is the difference in height between the exterior finish ground level and the lower of the top of the concrete footing that supports the foundation wall or the interior finish ground level. Where an interior concrete slab-on-grade is provided and is in contact with the interior surface of the foundation wall, measurement of the unbalanced backfill height from the exterior finish ground level to the top of the interior concrete slab is permitted.

d. Solid grouted hollow units or solid masonry units.

e. Wall construction shall be in accordance with either Table R404.1.1(2), Table R404.1.1(3), Table R404.1.1(4), or a design shall be provided.

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If reinforcement is required, the following chart specifies the rebar sizing and spacing for nominal 8" concrete block walls (assume middle column if soil class unknown). For 10" and 12" concrete block walls, consult IRC Tables R404.1.1(3) & R404.1.1(4), or contact the office to request this information:

TABLE R404.1.1(2)
8-INCH MASONRY FOUNDATION WALLS WITH REINFORCING WHERE d > 5 INCHES[a, c]

WALL HEIGHT	HEIGHT OF UNBALANCED BACKFILL[e]	MINIMUM VERTICAL REINFORCEMENT AND SPACING (INCHES)[b, c]		
		Soil classes and lateral soil load[d] (psf per foot below grade)		
		GW, GP, SW and SP soils 30	GM, GC, SM, SM-SC and ML soils 45	SC, ML-CL and inorganic CL soils 60
6 feet 8 inches	4 feet (or less)	#4 at 48	#4 at 48	#4 at 48
	5 feet	#4 at 48	#4 at 48	#4 at 48
	6 feet 8 inches	#4 at 48	#5 at 48	#6 at 48
7 feet 4 inches	4 feet (or less)	#4 at 48	#4 at 48	#4 at 48
	5 feet	#4 at 48	#4 at 48	#4 at 48
	6 feet	#4 at 48	#5 at 48	#5 at 48
	7 feet 4 inches	#5 at 48	#6 at 48	#6 at 40
8 feet	4 feet (or less)	#4 at 48	#4 at 48	#4 at 48
	5 feet	#4 at 48	#4 at 48	#4 at 48
	6 feet	#4 at 48	#5 at 48	#5 at 48
	7 feet	#5 at 48	#6 at 48	#6 at 40
	8 feet	#5 at 48	#6 at 48	#6 at 32
8 feet 8 inches	4 feet (or less)	#4 at 48	#4 at 48	#4 at 48
	5 feet	#4 at 48	#4 at 48	#5 at 48
	6 feet	#4 at 48	#5 at 48	#6 at 48
	7 feet	#5 at 48	#6 at 48	#6 at 40
	8 feet 8 inches	#6 at 48	#6 at 32	#6 at 24
9 feet 4 inches	4 feet (or less)	#4 at 48	#4 at 48	#4 at 48
	5 feet	#4 at 48	#4 at 48	#5 at 48
	6 feet	#4 at 48	#5 at 48	#6 at 48
	7 feet	#5 at 48	#6 at 48	#6 at 40
	8 feet	#6 at 48	#6 at 40	#6 at 24
	9 feet 4 inches	#6 at 40	#6 at 24	#6 at 16
10 feet	4 feet (or less)	#4 at 48	#4 at 48	#4 at 48
	5 feet	#4 at 48	#4 at 48	#5 at 48
	6 feet	#4 at 48	#5 at 48	#6 at 48
	7 feet	#5 at 48	#6 at 48	#6 at 32
	8 feet	#6 at 48	#6 at 32	#6 at 24
	9 feet	#6 at 40	#6 at 24	#6 at 16
	10 feet	#6 at 32	#6 at 16	#6 at 16

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 pound per square foot per foot = 0.157 kPa/mm.

a. Mortar shall be Type M or S and masonry shall be laid in running bond.

b. Alternative reinforcing bar sizes and spacings having an equivalent cross-sectional area of reinforcement per lineal foot of wall shall be permitted provided the spacing of the reinforcement does not exceed 72 inches.

c. Vertical reinforcement shall be Grade 60 minimum. The distance, *d*, from the face of the soil side of the wall to the center of vertical reinforcement shall be at least 5 inches.

d. Soil classes are in accordance with the Unified Soil Classification System and design lateral soil loads are for moist conditions without hydrostatic pressure. Refer to Table R405.1.

e. Unbalanced backfill height is the difference in height between the exterior finish ground level and the lower of the top of the concrete footing that supports the foundation wall or the interior finish ground level. Where an interior concrete slab-on-grade is provided and is in contact with the interior surface of the foundation wall, measurement of the unbalanced backfill height from the exterior finish ground level to the top of the interior concrete slab is permitted.

For **poured concrete walls**, the following chart specifies the minimum **horizontal reinforcement** required:

TABLE R404.1.2(1)
MINIMUM HORIZONTAL REINFORCEMENT FOR CONCRETE BASEMENT WALLS[a, b]

MAXIMUM UNSUPPORTED HEIGHT OF BASEMENT WALL (feet)	LOCATION OF HORIZONTAL REINFORCEMENT
≤ 8	One No. 4 bar within 12 inches of the top of the wall story and one No. 4 bar near mid-height of the wall story.
> 8	One No. 4 bar within 12 inches of the top of the wall story and one No. 4 bar near third points in the wall story.

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 pound per square inch = 6.895 kPa.

a. Horizontal reinforcement requirements are for reinforcing bars with a minimum yield strength of 40,000 psi and concrete with a minimum concrete compressive strength 2,500 psi.

b. See Section R404.1.2.2 for minimum reinforcement required for foundation walls supporting above-grade concrete walls.

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The following chart specifies the minimum required **vertical reinforcement** for all sizes of **poured concrete walls:**

TABLE R404.1.2(8)
MINIMUM VERTICAL REINFORCEMENT FOR 6-, 8-, 10-INCH AND 12-INCH NOMINAL FLAT BASEMENT WALLS[b, c, d, e, f, h, l, k, n]

MAXIMUM WALL HEIGHT (feet)	MAXIMUM UNBALANCED BACKFILL HEIGHT[g] (feet)	MINIMUM VERTICAL REINFORCEMENT-BAR SIZE AND SPACING (inches)											
		Soil classes[a] and design lateral soil (psf per foot of depth)											
		GW, GP, SW, SP 30				GM, GC, SM, SM-SC and ML 45				SC, ML-CL and inorganic CL 60			
		Minimum nominal wall thickness (inches)											
		6	8	10	12	6	8	10	12	6	8	10	12
5	4	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
	5	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
6	4	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
	5	NR	NR	NR	NR	NR	NR[i]	NR	NR	4 @ 35	NR[i]	NR	NR
	6	NR	NR	NR	NR	5 @ 48	NR	NR	NR	5 @ 36	NR	NR	NR
7	4	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
	5	NR	NR	NR	NR	NR	NR	NR	NR	5 @ 47	NR	NR	NR
	6	NR	NR	NR	NR	5 @ 42	NR	NR	NR	6 @ 43	5 @ 48	NR[i]	NR
	7	5 @ 46	NR	NR	NR	6 @ 42	5 @ 46	NR[i]	NR	6 @ 34	6 @ 48	NR	NR
8	4	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
	5	NR	NR	NR	NR	4 @ 38	NR[i]	NR	NR	5 @ 43	NR	NR	NR
	6	4 @ 37	NR[i]	NR	NR	5 @ 37	NR	NR	NR	6 @ 37	5 @ 43	NR[i]	NR
	7	5 @ 40	NR	NR	NR	6 @ 37	5 @ 41	NR[i]	NR	6 @ 34	6 @ 43	NR	NR
	8	6 @ 43	5 @ 47	NR[i]	NR	6 @ 34	6 @ 43	NR	NR	6 @ 27	6 @ 32	6 @ 44	NR
9	4	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
	5	NR	NR	NR	NR	4 @ 35	NR[i]	NR	NR	5 @ 40	NR	NR	NR
	6	4 @ 34	NR[i]	NR	NR	6 @ 48	NR	NR	NR	6 @ 36	6 @ 39	NR[i]	NR
	7	5 @ 36	NR	NR	NR	6 @ 34	5 @ 37	NR	NR	6 @ 33	6 @ 38	5 @ 37	NR[i]
	8	6 @ 38	5 @ 41	NR[i]	NR	6 @ 33	6 @ 38	5 @ 37	NR[i]	6 @ 24	6 @ 29	6 @ 39	4 @ 48[m]
	9	6 @ 34	6 @ 46	NR	NR	6 @ 26	6 @ 30	6 @ 41	NR	6 @ 19	6 @ 23	6 @ 30	6 @ 39
10	4	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
	5	NR	NR	NR	NR	4 @ 33	NR[i]	NR	NR	5 @ 38	NR	NR	NR
	6	5 @ 48	NR[i]	NR	NR	6 @ 45	NR	NR	NR	6 @ 34	5 @ 37	NR	NR
	7	6 @ 47	NR	NR	NR	6 @ 34	6 @ 48	NR	NR	6 @ 30	6 @ 35	6 @ 48	NR[i]
	8	6 @ 34	5 @ 38	NR	NR	6 @ 30	6 @ 34	6 @ 47	NR[i]	6 @ 22	6 @ 26	6 @ 35	6 @ 45[m]
	9	6 @ 34	6 @ 41	4 @ 48	NR[i]	6 @ 23	6 @ 27	6 @ 35	4 @ 48[m]	DR	6 @ 22	6 @ 27	6 @ 34
	10	6 @ 28	6 @ 33	6 @ 45	NR	DR[j]	6 @ 23	6 @ 29	6 @ 38	DR	6 @ 22	6 @ 22	6 @ 28

For SI: 1 foot = 304.8 mm; 1 inch = 25.4 mm; 1 pound per square foot per foot = 0.1571 kPn^2/m, 1 pound per square inch = 6.895 kPa.
NR = Not required.

a. Soil classes are in accordance with the Unified Soil Classification System. Refer to Table R405.1.
b. Table values are based on reinforcing bars with a minimum yield strength of 60,000 psi.
c. Vertical reinforcement with a yield strength of less than 60,000 psi and/or bars of a different size than specified in the table are permitted in accordance with Section R404.1.2.3.7.6 and Table R404.1.2(9).
d. NR indicates no vertical wall reinforcement is required, except for 6-inch nominal walls formed with stay-in-place forming systems in which case vertical reinforcement shall be #4@48 inches on center.
e. Allowable deflection criterion is $L/240$, where L is the unsupported height of the basement wall in inches.
f. Interpolation is not permitted.
g. Where walls will retain 4 feet or more of unbalanced backfill, they shall be laterally supported at the top and bottom before backfilling.
h. Vertical reinforcement shall be located to provide a cover of 1.25 inches measured from the inside face of the wall. The center of the steel shall not vary from the specified location by more than the greater of 10 percent of the wall thickness or $^1/_8$-inch.
i. Concrete cover for reinforcement measured from the inside face of the wall shall not be less than $^3/_4$-inch. Concrete cover for reinforcement measured from the outside face of the wall shall not be less than $1^1/_2$ inches for No. 5 bars and smaller, and not less than 2 inches for larger bars.
j. DR means design is required in accordance with the applicable building code, or where there is no code in accordance with ACI 318.
k. Concrete shall have a specified compressive strength, f'_c, of not less than 2,500 psi at 28 days, unless a higher strength is required by footnote l or m.
l. The minimum thickness is permitted to be reduced 2 inches, provided the minimum specified compressive strength of concrete, f'_c, is 4,000 psi.
m. A plain concrete wall with a minimum nominal thickness of 12 inches is permitted, provided minimum specified compressive strength of concrete, f'_c, is 3,500 psi.
n. See Table R611.3 for tolerance from nominal thickness permitted for flat walls.

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RESIDENTIAL INSPECTION CHECKLIST

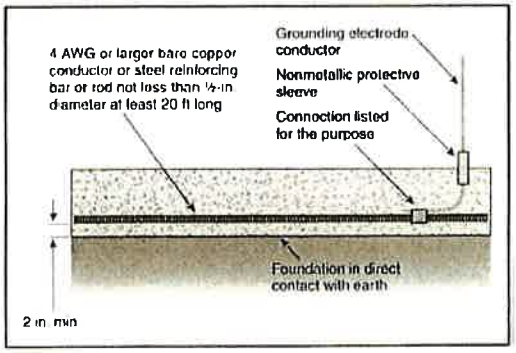
Please note: This list is not inclusive of all items that may require inspection. Failure to be ready for a requested inspection may result in a re-inspection fee. In a Special Flood Hazard Area, all provisions of the municipal code and Flood-Resistant construction must be followed.

FOOTINGS:

REQUIREMENT AND CODE SECTION OR REFERENCE

Contact the Development and Engineering office for footing specifications within a flood zone.

1. Job address is posted in a visible location. (IRC R319.1)
2. Sanitary facilities for workers on site. (IBC 3305.1) (IPC 311.1)
3. Construction exit is installed and all required erosion control measures are in place.
4. Building setbacks and location match approved plot plan/site plan. (IRC R106.2)
5. Footing dug to width and depth acceptable by Standard Operating Procedures or copy of report for soils testing required, unless engineered drawings submitted to show otherwise. The City of Cleveland Standard Operating Procedures allow for no less than 12" deep supported on undisturbed natural soils or engineered fill, minimum 8" concrete depth, 18" – 24" wide with two runs #4 rebar (minimum) seated to provide 3" cover. Single Family Residential can be built on plain concrete footings if soil testing proves rebar is not needed. (IRC R403.1) (IBC 1809.7)
6. Check footing for loose material, water, debris, mud, organic material and expansive soils. If fill material is on site, a copy of the soil report must be made available for the inspector. (IRC Table R405.1)
7. Steel properly lapped, supported, correct size and free from rust, dirt or debris. Minimum size for residential is 2 runs #4 rebar, unless otherwise engineered. Laps should be 20" to 30" with two ties per lap. (IRC R404.1.3.5.4) (R611.5.4(1).
8. Rebar at all corners to be field bent.
9. Footings are level or stepped if the ground slopes more than 1 foot in 10 feet. Bulkheads are installed. (IRC R403.1.5)
10. Footings are designed to project beyond the face of the foundation wall at least 2 inches, but not more than the thickness of the footing. (IRC R403.1.1)
11. Ground rod installed (if required). Rebar is not an acceptable material for the grounding rod, unless the grounding rod is entirely interior to the building.



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2018 IECC ENERGY INSPECTION REQUIREMENTS:

REQUIREMENT AND CODE SECTION OR REFERENCE (R-value table is from the 2009 IECC as adopted by the State of TN and the City of Cleveland)

The building thermal envelope drives all your insulation requirements. First you must determine where the building thermal envelope has been located.

TABLE 402.1.1 INSULATION AND FENESTRATION REQUIREMENTS BY COMPONENT[a]

CLIMATE ZONE	FENESTRATION *U*-FACTOR[b]	SKYLIGHT[b] *U*-FACTOR	GLAZED FENESTRATION SHGC[b, e]	CEILING *R*-VALUE	WOOD FRAME WALL *R*-VALUE	MASS WALL *R*-VALUE[i]	FLOOR *R*-VALUE	BASEMENT[c] WALL *R*-VALUE	SLAB[d] *R*-VALUE & DEPTH	CRAWL SPACE[c] WALL *R*-VALUE
4 except Marine	0.35	0.60	NR	38	13	5/10	19	10/13	10, 2 ft	10/13

a. *R*-values are minimums. *U*-factors and SHGC are maximums. R-19 batts compressed into a nominal 2 × 6 framing cavity such that the *R*-value is reduced by R-1 or more shall be marked with the compressed batt *R*-value in addition to the full thickness *R*-value.
b. The fenestration *U*-factor column excludes skylights. The SHGC column applies to all glazed fenestration.
c. "15/19" means R-15 continuous insulated sheathing on the interior or exterior of the home or R-19 cavity insulation at the interior of the basement wall. "15/19" shall be permitted to be met with R-13 cavity insulation on the interior of the basement wall plus R-5 continuous insulated sheathing on the interior or exterior of the home. "10/13" means R-10 continuous insulated sheathing on the interior or exterior of the home or R-13 cavity insulation at the interior of the basement wall.
d. R-5 shall be added to the required slab edge *R*-values for heated slabs. Insulation depth shall be the depth of the footing or 2 feet, whichever is less in Zones 1 through 3 for heated slabs.
e. There are no SHGC requirements in the Marine Zone.
f. Basement wall insulation is not required in warm-humid locations as defined by Figure 301.1 and Table 301.1.
g. Or insulation sufficient to fill the framing cavity, R-19 minimum.
h. "13+5" means R-13 cavity insulation plus R-5 insulated sheathing. If structural sheathing covers 25 percent or less of the exterior, insulating sheathing is not required where structural sheathing is used. If structural sheathing covers more than 25 percent of exterior, structural sheathing shall be supplemented with insulated sheathing of at least R-2.

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i. The second *R*-value applies when more than half the insulation is on the interior of the mass wall.

j. For impact rated fenestration complying with Section R301.2.1.2 of the *International Residential Code* or Section 1609.1.2 of the *International Building Code*, the maximum *U*-factor shall be 0.75 in Zone 2 and 0.65 in Zone 3.

General

1. R-value is applied by the manufacture to each piece of insulation 12 inches or greater in width. IECC 303.1.1
2. Blown or sprayed insulation requires documentation of the initial installed thickness, settled thickness, settled R-value, installed density, coverage area and number of bags installed. IECC 303.1.1.1
3. A permanent certificate is posted in a utility room, mechanical room, or other approved location inside the house. IECC 401.3
4. Insulation applied to the exterior below grade wall shall be protected to prevent degradation andextend a minimum of 6" below grade. IECC 303.2.1

Building Thermal Envelope

1. The building thermal envelope meets requirements for Climate Zone 4. IECC 402.1
2. Access doors from conditioned to unconditioned spaces are weatherstripped and insulated. IECC 402.2.4
3. Baffles or venting to provide 1" space between insulation and roof sheathing. IECC 402.2.3
4. In ceilings with attic spaces, R-30 may be used to satisfy the requirement for R-38 whenever full height uncompressed R-30 insulation extends over the wall top plate at the eaves and 100% of the ceiling is at this full R-value. IECC 402.2.1
5. In ceiling without attic space R-30 may be used when space does not allow for higher R-values. The reduction is limited to 500 sq ft. or 20 percent of the total insulated ceiling area. IECC 402.2.2
6. The thickness of blown in insulation is noted on markers. One marker is required for every 300 sq feet of attic space with numbers a minimum of 1" in height, facing the attic access opening. IECC 303.1.1.1
7. Floor insulation is installed to maintain permanent contact with the underside of the subfloor decking. IECC 402.2.8
8. Slab on-grade floors need not be insulated due to the potential for termite infestation. IECC 402.2.10
9. The building thermal envelope shall be constructed to limit air leakage. IECC 402.4.1
10. The buildings air leakage rate has been tested and verified by a blower door test (5 ACH_{50} Max) IECC 402.4.1.2 (modified in City Ordinance)

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11. Duct tightness verified (mandatory for ducts outside the building thermal envelope) by post-construction leakage less than or equal to 4 cfm per 100 sf if the air handler is installed at the time of the test, and less than or equal to 3cfm per 100 sf if the air handler is not installed. IECC 403.3.4
12. As an alternative to insulating floors over crawl spaces, crawl space walls shall be permitted to be insulated when the crawl space is not vented to the outside. Crawl space wall insulation shall be permanently fastened to the wall and extend downward from the floor to the finished grade level and then vertically and/or horizontally for at least an additional 24 inches. Exposed earth in unvented crawl space foundations shall be covered with a continuous Class I vapor retarder (6 mil poly) in accordance with the International Building Code. All joints of the vapor retarder shall overlap 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. IECC 402.2.11

Air Sealing Requirements

***ADAPTED FROM* 2018 IECC TABLE 402.4.2 AIR BARRIER AND INSULATION INSTALLATION**

COMPONENT	CRITERIA
1. Air barrier and thermal barrier	Exterior thermal envelope insulation for framed walls is installed in substantial contact and continuous alignment with building envelope air barrier. Breaks or joints in the air barrier are filled or repaired. House wrap joints are taped or sealed. Air-permeable insulation is not used as a sealing material. Air-permeable insulation is inside of an air barrier.
2. Ceiling/attic	Air barrier in any dropped ceiling/soffit shall be aligned with the insulation and any gaps in the air barrier sealed. Attic access (except unvented attic), knee wall door, or drop down stair is sealed.
3. Walls	Corners and headers are insulated. Junction of foundation and sill plate is sealed.
4. Windows and doors	The space between window/door jambs and framing is sealed.
5. Rim joists	Rim joists shall be insulated and include an air barrier.
6. Floors (including above-garage and cantilevered floors)	Insulation shall be installed to maintain permanent contact with underside of subfloor decking. The air barrier shall be installed at any exposed edge of insulation.
7. Crawl space walls	Where provided in lieu of floor insulation, insulation shall be permanently attached to the crawlspace walls. Exposed earth in unvented crawl spaces shall be covered with a Class I vapor retarder with overlapping joints taped.

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8. Shafts, penetrations	Duct shafts, utility penetrations, and flue shafts opening to exterior or unconditioned space shall be sealed.
9. Narrow cavities	Batts in narrow cavities shall be cut to fit, or narrow cavities shall be filled by insulation that on installation readily conforms to the available cavity space.
10. Garage separation	Air sealing shall be provided between the garage and conditioned spaces.
11. Recessed lighting	Recessed light fixtures installed in the building thermal envelope shall be air tight, IC rated, and sealed to the drywall.
12. Plumbing and wiring	Batt insulation shall be cut neatly to fit around wiring and plumbing in exterior walls, or insulation that on installation readily conforms to available space shall extend behind piping and wiring.
13. Shower/tub on exterior wall	Showers and tubs on exterior walls have insulation and an air barrier separating them from the exterior wall.
14. Electrical/phone box on exterior walls	The air barrier shall be installed behind electrical or communication boxes or air sealed boxes shall be installed.
15.. Common wall	Air barrier is installed in common wall between dwelling units.
16. HVAC register boots	HVAC register boots that penetrate building thermal envelope shall be sealed to the subfloor or drywall.
17. Fireplace	An air barrier shall be installed on fireplace walls. Fireplaces shall have gasketed doors.

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FINAL

EXTERIOR

1. House numbers plainly legible and visible from the street, minimum 4". (R319.1)
2. Wood siding, sheathing and wall framing has a minimum clearance of 6" from the ground or 2" from concrete. (R317.1)
3. Grade slopes a minimum of 6" away from the building within the first 10'. (R401.3)
4. Carports open on at least two sides. (R309.2)

GARAGE

1. Garage ceiling beneath habitable rooms shall be installed perpendicular to the ceiling framing and be of not less than 5/8" Type X gypsum board or equivalent.
2. Ducts in garages which penetrate the walls or ceilings separating the dwelling from the garage shall be constructed of a minimum No. 26 gage sheet metal and can have no openings into the garage. (R302.5)
3. An opening from garage directly into a room used for sleeping purposes is not permitted. (R302.5.1)
4. Door between garage and residence is solid wood, not less than 1 3/8" in thickness or honeycomb core steel door not less than 1 3/8" thick, or 20 minute fire rated door, and equipped with a self-closing device. (R302.5.1)
5. Walls separating the residence and garage shall be not less than 1/2" gypsum board or equivalent applied to the garage side.

DECKS

1. All deck material is treated or naturally resistant to decay. (R317)
2. Fasteners and hardware for pressure preservative and fire-retardant-treated wood shall be of hot-dipped galvanized steel, stainless steel, silicon bronze or copper. (R317.3)
3. Bottom of footings are a minimum 12" below grade for freeze protection. (R403.1.4)

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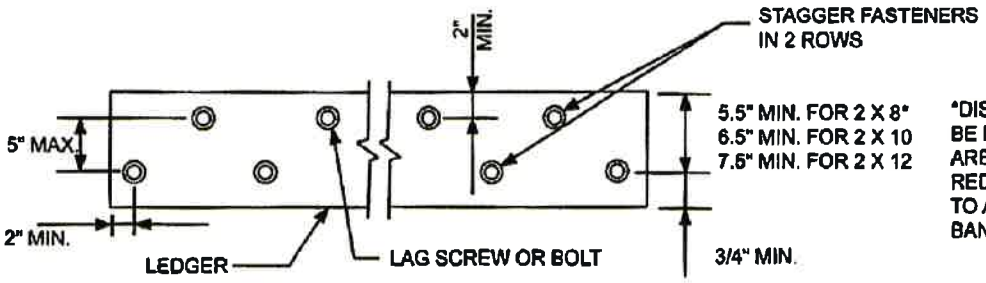
4. Deck is properly attached to primary structure. Attachment shall not be accomplished by the use of toenails or nails subject to withdrawal.(R507.1) Lag screws or bolts in the deck ledger shall be placed in accordance with Table 507.2.1:

TABLE 507.2.1
PLACEMENT OF LAG SCREWS AND BOLTS IN DECK LEDGERS AND BAND JOISTS

	MINIMUM END AND EDGE DISTANCES AND SPACING BETWEEN ROWS			
	TOP EDGE	BOTTOM EDGE	ENDS	ROW SPACING
Ledger[a]	2 inches[d]	3/4 inch	2 inches[b]	1 5/8 inches[b]
Band Joist[c]	3/4 inch	2 inches	2 inches[b]	1 5/8 inches[b]

For SI: 1 inch = 25.4 mm.
a. Lag screws or bolts shall be staggered from the top to the bottom along the horizontal run of the deck ledger in accordance with Figure R507.2.1(1).
b. Maximum 5 inches.
c. For engineered rim joists, the manufacturer's recommendations shall govern.
d. The minimum distance from bottom row of lag screws or bolts to the top edge of the ledger shall be in accordance with Figure R507.2.1(1).



For SI: 1 inch = 25.4 mm.

GUARDS AND HANDRAILS

1. Guards required at the open side of walking surfaces, including stairs, ramps and landings that are located more than 30" above grade. (R312.1.1)
2. Guards do not have openings which allow passage of a 4" sphere. (R312.1.3)
   Triangle formed by riser, tread and bottom element of guardrail does not allow passage of a 6" sphere. (R312.1.3)
4. Required guards shall not be less than 36" in height above adjacent walking surface. (R312.1.2)

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5. Handrail required at stairs with 4 or more risers. (R311.7.8)
6. Handrail height shall not be less than 34" and not more than 38". (R311.7.8.1)
7. Handrail shall be graspable and of approved dimensions. (R311.7.8.3)
8. Handrails are continuous for the full length of the stairway. (R311.7.8.2)
9. Handrail ends shall be returned or terminate in newel post or safety terminal. (R311.7.8.2)
10. Stairways shall not be less than 36" in clear width at all points above the permitted handrail height. (R311.7.1)
11. Glazing adjacent to the landing at the bottom of a stairway that is less than 36" above the landing and within 60" horizontally of the bottom tread is considered a hazardous location and must be tempered. (R308.4.7)

ATTIC

1. Attic accesses required to areas exceeding 30 square feet and have a vertical height of 30" or greater. Rough framed opening shall not be less than 22"x30". (R807.1)
3. Insulation does not block the free flow of air at eave or cornice vents. Minimum 1" space is provided between the insulation and roof sheathing. (R806.3)
4. All insulation requirements have been met. (See Energy Inspection checklist)
5. All plumbing vents and mechanical vents are properly vented to the exterior.

CRAWLSPACE

1. Floor insulation having an R-value of R-19 or greater is installed to maintain permanent contact with the underside of the subfloor decking.
2. All debris removed from the crawl space. (R408.5)
3. Crawlspace venting requirements/vapor barrier requirements are properly met. (See Framing Inspection checklist)

SMOKE AND CARBON MONOXIDE ALARMS

1. Alarms are interconnected in such a manner that the actuation of one alarm will activate all of the alarms. (R314.4)
2. An approved carbon monoxide alarm is installed in dwelling unit with fuel fired appliances and in dwelling units that have an attached garage. (R315.1)

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3. Smoke alarms shall be located in each sleeping room, outside each separate sleeping area, basements, and habitable attics. (R314.4)
4. Carbon monoxide detector is a permanent fixture and installed outside of each separate sleeping area in the immediate vicinity of the bedrooms. (R315.1)

WINDOWS AND GLAZING

1. Basements, habitable attics, and every sleeping room have at least one operable emergency escape and rescue opening. (R310.1)
2. Emergency egress opening located in each sleeping room. (R310.1)
3. Emergency egress openings do not have a sill height greater than 44" above the finished floor. (R310.1)
4. All emergency egress openings have a minimum net clear opening of 5.7 square feet. (R310.1.1)
   Emergency egress opening minimum net clear opening height shall be 24". (R310.1.2)
6. Emergency egress opening minimum net clear width shall be 20". (R310.1.3)
7. Emergency escape and rescue openings shall be operation from the inside of the room without the use of keys, tools, or special knowledge. (R310.1.4)
8. All tempered glazing is installed in required locations. (See Framing inspection checklist)
9. Window fall protection is provided as required for windows whose sill is located higher than 72" off of finished grade on the exterior and the height of window sill on interior is closer than 24" to finish floor. (R312.2)

In order to be granted a Certificate of Occupancy, the City of Cleveland requires that permanent erosion control be in place at the time of the final inspection.

A blower door test and duct tightness test must be passed before a Certificate of Occupancy can be issued.