

Miscellaneous Notes for Residential Construction

The following observations have been made over several years of inspections as the most common problem areas in residential construction but a few items apply to commercial construction as well. This list is not all-inclusive. For further information consult the 2015 International Residential Code, the 2015 International Building Code, and the 2015 International Energy Conservation Code.

1. **INSPECTIONS:** Inspections may be scheduled by calling the Permits office at 301-334-7470 between the hours of 8:30 a.m. and 4:30 p.m. Please do not call the inspectors in the field to set up inspections! Due to the volume of inspections, requests for inspections need to be made a minimum 24 hours in advance. We cannot set a specific time for an inspection. We can only give an approximation as to whether it will be in the morning or afternoon. During times of inclement weather some footer inspections may be scheduled on a last minute basis. Please provide the permit number when scheduling an inspection.
2. **BUILDING PLACARD:** The building permit placard must be visibly posted on the job site. Failure to do so will create communication problems. The inspector needs a centralized location to leave inspection stickers and/or correction notices.
3. **BUILDING PLANS:** Plans must be available on the job site for inspectors to review and will need to be there from “footer” inspection through to the “final” inspection. These plans must match the house as built as well as match the plans left at the Office of Permits and Inspections. Subsequent changes to plans during construction shall require review by the Permits Office.
4. **FOOTERS:** Inspection is required prior to pouring of any concrete. Minimum depth from the bottom of the footer to the finish grade will be no less than 36”. Thickness is usually 8” or more with an absolute minimum of 6”. Width is usually twice the width of the block size being used (16”, 20” or 24”) with an absolute minimum of 4” wider than the masonry or concrete placed on top of the footer. Final size will depend on soil type and number of stories to be carried. Steps, sometimes called jumps, in the footer will be formed and poured level and plumb. The vertical portion of these steps (jumps) shall meet the same width and thickness requirements as the footers. Footers shall be continuous around the perimeter of each level of the foundation. Steps (jumps) should be kept as short as practical, preferably no more than 48” in height. All grade pins and bulkheads need to be installed. Loose fill, topsoil, roots or other vegetation shall be removed before concrete is poured. If a thickened slab is to be used under load carrying walls this area will need to meet the same requirements as the rest of the footings as to width and thickness. Pouring of concrete during times of inclement weather will require protection from the elements. No concrete shall be poured on frozen ground. (See additional info: Pouring Concrete in Cold Weather).

5. **FOUNDATIONS:** All bed and head joints in masonry walls shall be filled as the masonry is laid. DO NOT try to fill them later with parging. Foundation coating as well as parging must go from the finish grade all the way down to the footer. It is recommended that a slight cove be formed at the junction of the wall and footer. Do not apply foundation coating directly to the block unless approved by the manufacturer for this method. To determine if and when core pouring and/or rebar will be needed consult with the Permits and Inspections Office. As a rule of thumb, dividing the block width by two will give you the maximum height of backfill that can be placed without the need for core pouring and/or rebar. Typically a minimum 4' of back fill would be placed against 8" blocks, 5' for 10" blocks and 6' for 12" blocks. The final height of the wall and final height of the backfill will determine the spacing for any core filling and the size and number of rebar. Anchor bolts, minimum ½" diameter, shall be placed a maximum of 6' on center and within 12" of the corners. Anchor straps traditionally require a closer spacing and usually require that holes be drilled through the sill plate the same as anchor bolts. Anchor straps shall be installed per Mfr. installation instructions. French drains shall also be installed prior to inspection. Do not backfill or begin framing until the foundation has passed inspection. (See additional information: Masonry Construction in Cold Weather)

6. **FRAMING:** The biggest single continual problem in framing is the lack of nails in OSB or plywood sheathing on walls, floors and roofs. Maximum nail spacing per Code is 6" on center on all supported edges and 12" on center throughout the rest of the sheet. Nails installed to hold siding in place do not count towards the required minimums. Laminated girders and headers shall have all joints located over a load bearing point such as a post, pier or wall. Check the codebook for acceptable locations for holes and notches in framing members. Manufactured framing materials must be installed per manufactured installation instructions. Girder trusses have specific nailing requirements that the manufacturer will send along with the trusses. If you do not receive a copy of these requirements with your trusses ask for it. LVL's and Glulams can have holes drilled horizontally but these are limited as to size, location and total number of holes. Check manufacturer's installation instructions for details. LVL's cannot have holes drilled vertically. In some cases Glulams can have vertical holes but the manufacturer or an engineer must size the beam large enough to allow for the hole. If notches are required check with the manufacturer or an engineer. Be prepared to justify any modifications to these manufactured beams. Before calling for a framing inspection be sure all trade work (i.e. plumbing, electrical, HVAC, sprinkler systems) has been roughed-in.

7. **DECKS:** Joist hangers are needed on both ends of the joists whenever they butt up against a beam or header. Do not use roofing, siding, sheetrock or other unapproved nails or screws in joist hangers. Check the manufacturer's installation book for nailing options. When the outer band is to be used as a header, spans greater than 48" between supports will need to be doubled. For header spans greater than 48" check readily available span charts. Through bolts or lag screws

with a minimum ½” diameter should be used to attach the deck to the house. For joist spans up to 8’, one bolt 24” on center. From 8-14’, 16” on center. From 14-20’, 12” on center. Beyond these spans engineering will be required. For decks that will hold hot tubs an engineered drawing will be required based on the weight of the tub and potential load of people. Any deck 30” or more off the ground will require guardrails and handrails. Minimum guardrail height is 36” and handrail height is 34” – 38”. Baluster, sometimes called picket, spacing is a maximum of 4” between each baluster. Handrails, both interior and exterior, shall have the ends return to a wall or end in a newell post and shall be continuous the entire length of the stairs. Flashing will be needed on decks attached to houses. If a deck or steps are not installed at the time of the final inspection a guard will need to be installed at the door to keep anyone from falling out of the door. Decks not approved for Hot Tubs will be noted on the Use and Occupancy Permit.

8. **WINDOWS:** At least one egress window will be required for each sleeping area if a door is not available. Each egress window must meet a minimum size opening in the normal operation of the window. Tilt sash windows will not meet the minimum openings unless they meet the following requirements. Grade floor windows can be 5 sq. ft. (720 sq. in.) only if the maximum height from the finished grade outside to the finished sill is no more than 44”. If a window is more than 44” from the finished grade to the finished sill a larger 5.7’ (820 sq. in.) window will be needed. Egress windows must be located so the sill height is within 44” of the floor. In most cases it is better to get the larger size window. Windows close to the floor may sometimes need to be tempered glass. The majority of windows installed above a tub need tempered glass. Check the codebook or with the Permits and Inspections Office for more details. If a finish trim is installed that protrudes beyond the surface of siding or the flange of a window such as a 1x4, then a “z – flashing” will be needed above the trim to keep water from going down behind the trim. If a window well is used it must have a minimum floor area of 9 sq. ft. with a minimum projection and width of 36”. If a casement window is used the 36” width would be measured from the window in the fully open position over to the edge of the window well. If the window well is more than 44” deep a ladder or steps shall be provided for the full height of the window well. (See additional information: Egress Window Sizing & Tempered Glass Location Requirements) A guardrail is required for window wells 44” or deeper. Windows less than 24” off the floor inside and greater than 6’ off the ground outside cannot open more than 4” or must have guards to 24” height.
9. **GARAGES:** Any attached garages must be fully separated from the house with 5/8” Type “X” rated drywall. Doors into dwellings shall be 1-3/8” solid wood, solid or honeycomb cored steel doors or 20 minute fire-rated doors equipped with self-closing device. Any ductwork penetrating the walls or ceilings shall be minimum 26-gauge sheet steel or other approved materials. No duct openings are allowed that connect the home heating system to the garage space. A floor height separation of 4” is required between the house and garage with the garage floor being lower than the house floor. For stairs to the basement from the garage a

minimum 4" tall curb will be needed around the stairwell. Any heating and cooling appliances located in a garage shall be protected from impact. Appliances that generate a glow, spark or flame capable of igniting gasoline vapors shall be installed with burners, burner ignition devices or heating elements and switches at least 18" above the floor. If a set of pull down stairs is desired in the garage then the attic area will need to have a firewall installed to separate the house and garage. The same 5/8" Type "X" drywall will be needed for this firewall. Firewalls must be taped. Any garage within 3' of the house must be fire rated on the inside of the garage wall closest to the house.

10. **RAFTER TIES:** Whenever a roof is constructed with rafters and a load-carrying ridge is not installed then rafter ties will be needed if ceiling joists are not in place to tie the bearing walls together. They shall be placed in the lower third of the overall height from the perimeter walls to the ridge. A tie will be needed every 48".
11. **FIREPLACES:** Any fireplace with the potential to burn solid fuel will need an outside air source with a minimum 6 sq. in. passageway or pipe and a maximum of 55 sq. in. located within 24" of the firebox. Hearth extensions shall be built to be self-supporting and independent on the floor framing. When the firebox opening is 6 sq. ft. or less the hearth shall extend outwards a minimum 16" and to the side 8". If the firebox is larger than 6 sq. ft. the hearth shall extend outwards 20" and 12" to the sides. An airspace of 2" is needed around fireplaces and chimneys and 4" to the rear of the firebox. The minimum wall thickness shall be 8" of solid masonry or hollow units fully grouted. Do not use hollow block only. Combustibles may be in contact with the area around the firebox if the walls are a minimum 12" of solid masonry. When laying up liners use fire clay or refractory cement and tight joints. Firebrick should not have more than a 1/4" thick joint. Chimneys must extend 24" taller than any obstruction within a 10' radius and extend 3' above roof shingles. Masonry flues must have a rain cap.
12. **GAS FIRED APPLIANCES:** All gas-fired appliances shall have shut off valves in the same room as the appliance within 6' of the appliance. For the proper location consult sections G2419.5 and G2419.5.1 of the codebook.
13. **INSULATION:** Ceilings – R49; Walls – R20; Floors – R30. The kraft paper on insulation cannot be left exposed because of its flammability in any application. Foams must be fire rated or covered and meet the 2015 International Energy Conservation Code (IECC).

REMINDER: A final plumbing and electrical inspection must be completed before the Use and Occupancy permit can be issued! Please contact an approved third party inspector to set up inspections.